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NOISE ABATEMENT AND CONTROL

Vol. IV—Standards and Measurement Methods, Legislation and Enforcement Problems

San Francisco, California Sept. 27-29, 1971

U.S. Environmental Protection Agency
Washington, D.C. 20460

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PREFACE

Under the Noise Pollution and Abatement Act of 1970 (Title IV to the Clean Air Amendment of 1970 (PL 91-604)), the Environmental Protection Agency, through the Office of Noise Abatement and Control, is required to hold public hearings. A series of eight of these hearings is being conducted in selected cities to aid the office of Noise Abatement and Control in compiling information relevant to its investigation of the Problem of Noise Pollution. Further, these hearings present an opportunity for the public and industry to express their viewpoints on the general subject of noise control. The volumes in the complete series will be:

Vol. I —Noise in Construction

Vol. II —Manufacturing and Transportation Noise (Highway and Air)

Vol. III —Urban Planning, Architectural Design; and Noise in the Home

Vol. IV —Standards and Measurement Methods, Legislation and Enforcement Problems

Vol. V —Agriculture and Recreational Use Noise

Vol. VI —Transportation (Rail and Other), Urban Noise Problems and Social Behavior

Vol. VII —Physiological and Psychological Effects

Vol. VIII—Technology and Economics of Noise Control; National Programs and their Relations with State and Local

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ENVIRONMENTAL PROTECTION AGENCY

PUBLIC HEARING ON STANDARDS AND MEASUREMENT METHODS, LEGISLATION AND ENFORCEMENT PROBLEMS

MONDAY, SEPT. 27, 1971

The hearing was convened at 9:00 a.m., Dr. Alvin F. Meyer, Jr., Director, Office of Noise Abatement and Control, Environmental Protection Agency, presiding as Chairman.

PANEL:

Robert Alexander Baron, Citizens for a Quieter City
Dr. Charles Dietrich, Bolt, Beranek & Newman
James L. Hildebrand
Henry Martin, Society of Automotive Engineers
Sheldon Plager, University of Illinois Law School

PROCEEDINGS

Dr. **MEYER**: I hereby call to order for the Administrator of the Environmental Protection Agency, Mr. William Ruckelshaus, this public hearing on noise, held under mandate from an act of Congress, the Noise Pollution and Abatement Act of 1970, Title IV, Public Law 91-604.

Before making some introductory remarks, I should like to introduce the panel members who are serving with me to hear these presentations regarding noise. As I introduce each of them, I would ask the panel member to raise his hand and identify himself.

Mr. Robert Alexander Baron, head of Citizens for a Quieter City, and author of an excellent work, "The Tyranny of Noise."

The next member of the panel is Dr. Charles Dietrich of the firm of Bolt, Beranek and Newman, a world famous organization concerned with acoustics and noise control.

The next member of the panel is Mr. James L. Hildebrand, a lawyer, who is the editor of an outstanding text, "Noise Pollution and the Law."

And also here today is Mr. Henry Martin of the American Society of Automotive Engineers. Mr. Martin is a technical expert, head of a very important effort in SAE. Many of you are familiar with its role in engineering and science in relation to noise as well as other aspects of pollution, science, and technology.

Tomorrow we will be joined by Dr. Sheldon Plager, professor of law at the University of Illinois Law School, and a member of the Governor of Illinois' Council on the Environment, and hopefully by Dr. Karl Kryter who, unfortunately, has advised me a few minutes ago that because of a personal situation, he will be late today and may not be able to join us.

Now before introducing another distinguished individual who is here with me, let me briefly explain to you the purpose of these hearings and how we shall proceed with them.

Noise, as an environmental problem, has been receiving increasing attention over the last several years, but it is no new problem. As a matter of fact, if you read either of the books by the authors who are here today, you will see that the problem goes back many centuries. The fact remains that noise, unwanted sound, is emerging as a serious problem in the field of environmental quality. The Congress has wisely directed that the Administration examine very carefully the measures we can take so that we do not have an "environmental crisis," but may, instead, anticipate what is needed to keep the problem under control. The Congress directed the Administrator of the Environmental Protection Agency to establish an Office of Noise Abatement and Control which would undertake a study leading to the preparation of a report to Congress, which is due on the 31st of December of this year. The Congress also directed that, in the course of preparing that report, the Administrator hold a series of public hearings to obtain information concerning public views, industry capabilities and other technical information relating to the noise problem.

This hearing, which is of national scope, is one of eight such hearings. The information adduced during the course of this hearing will be submitted to the Congress, and a complete verbatim transcript will also serve as the basis of recommendations and information contained in our report. That report is currently in the process of preparation. We expect to meet our deadlines. It will have a major bearing on legislative proposals now pending in the Congress, some of which you may be familiar with.

At this point let me give a few words about our rules of procedure. These hearings will be conducted in the main under the same rules as a field hearing or an investigative hearing for information purposes as conducted by the Committee on Government Operations of the House of Representatives. Under those rules, the witnesses provide us with their testimony. The panel, serving as the experts, will direct questions to the witness. No questions are permitted directly from the floor. However, if an individual feels that they have a question that they would like asked of a witness, they may submit it in writing to one of the staff members, who are identified with a little ecology flag on a name plate. They are Mrs. Seidman, my Executive Officer; Mrs.

Dade, Mr. Hardesty, Mr. Bergesen. If you have a question, simply write it out and they will deliver it to me. If it is a general question, I will ask the witness or will direct it to one of the panel members. If it is something very narrow in interest, we will arrange for whoever asked the question to meet with the appropriate person to get his answer.

We feel these rules of procedure will allow us to hear a large number of witnesses and operate in a fashion which allows general input from those attending.

Before introducing a member of the Administrator of the EPA's staff who is here with us today, let me give thanks to people from his office who have done so much towards organizing this hearing in such a credible manner. Mr. Tom Hahn, who was a summer intern, and Mr. Todd Bergesen, who is here, have done an outstanding job of preparing this hearing. I want to publicly thank them so the record going to Congress will acknowledge the same.

I should now like to introduce Mr. Paul DeFalco, Regional Administrator of the Environmental Protection Agency who is a senior official of EPA in this Region. Paul?

STATEMENT OF PAUL DeFALCO, ADMINISTRATOR, REGION IX, EPA

Mr. **PAUL DEFALCO**: Thank you, Dr. Meyer. I would also like to welcome you all to the noise hearing. And I hope that in the course of the hearing that Dr. Meyer and his staff of experts can take back to the Congress the concerns we here on the West Coast have in terms of noise pollution.

I do have a small problem, Al, that I was faced with this weekend, and I wonder if the noise hearings would develop some answers for me. I have two teenagers and a hi-fi set. I don't know if we are going to be able to solve that problem.

Thank you.

Dr. **MEYER**: Thank you, Paul. That is one of our problems.

I think before introducing the first witness, one ought to make the observation that we are dealing with an extremely complex scientific, technological, sociological, economic and since all of those things add up to political, we can use the phrase "political problem." What is one person's music is another person's unwanted sound. We are all aware of this. We get below the threshhold of actual hearing loss, actual demonstrable physiological effects and we get into an extremely difficult area of defining the problem. One of the purposes of this hearing is to help define the problem so we may have an orderly, efficient and economic solution.

Well, the Chair has done enough talking, so at this point I should like to ask if Mr. Milan Dostal, the Councilman from the City of Newport Beach, is here and, if so, sir, I should like to ask you to come forward, and we will be happy to hear from you.

STATEMENT OF MILAN DOSTAL, CITY COUNCIL OF NEWPORT BEACH, CALIF.

Mr. **MILAN DOSTAL**: Thank you very much.

I am Milan M. Dostal representing the City Council of the

City of Newport Beach, California. Newport Beach has a population of 53,000 and is located on the Orange County Coast approximately 40 miles southeast of Los Angeles between the cities of Long Beach and San Diego. Newport Beach is an important day visitor resort with high quality water-oriented residential communities and California's most popular recreational small boat harbor.

We wish to bring to the attention of this Board the environmental protection requirements of our citizens as related to the damaging effect of noise from jet aircraft due to the adjacency to Orange County Airport on our northern boundaries. The airport ranks nationally about fifth in total number of aircraft movements. This facility is served by three commercial carriers, two of which utilize jet equipment, numerous private jets, and a substantial general aviation fleet. The airport is owned and operated by the County of Orange and substantially all departures pass directly over the City of Newport Beach. Additionally, the City is immediately under the all-weather jet departure zone for the nearby Marine Corps Air Station at El Toro, and is utilized day and night by military jet aircraft, and, finally, two military combat helicopter flight corridors pass through the City.

Jet operations have been in existence since 1968. Since then our homeowners have initiated claims in the amount of $28,000,000 against the operator of the Orange County Airport alleging depreciation of property values from noise pollution, particulate fallout, and vibration from jet engine noise. However, no amount of money can be placed on the personal discomfort, irritation and nuisance suffered daily by our citizens. Regardless of the disposition of the homeowners' claims, these lawsuits represent the frustrations and deep concerns of a substantial number of persons. Continued aviation noise pollution can only serve to heighten the bitterness between residents and governmental officials.

A number of measures have been instituted as an attempt to mitigate this environmental problem, including:

1) Extensive experimentation with optimum noise reduction flight operating procedures.

2) Recent installation of one of the nation's most sophisticated local airport noise monitoring systems.

3) Limitations of the number of carriers and hours of operation through terminal lease restrictions.

4) Establishment of airport land use control agencies to prevent further airport-residential land use incompatibility.

5) Advocacy before state and federal agencies to encourage a strengthening of regulations dealing with aircraft noise emissions and engine certification.

These efforts have been only modestly successful. Meaningful prevention of jet noise pollution must come from the federal level. Local agencies have neither the jurisdictional authority nor the resources to cope with jet noise pollution—the nation's most pervasive and common source of noise irritation.

My personal interest in the field of noise abatement started with my seven years' experience in aviation cases while acting as Trial Attorney with the Department of Justice in Washington, D.C. My work continued in the field of aviation law as an Assistant United States Attorney in Los Angeles and, later, in my own private practice. My interest has been whetted by the fact that for the last several years I have owned a home under the flight path of these jets no more than one and three fourths miles from the airport boundary and have personally experienced this encroachment of my family's tranquility.

Based upon our experience, we suggest the Environmental Protection Agency be granted a more important role in the federal government's search for a solution to our noise problem. This role can be in three different areas—research, legislation and enforcement.

RESEARCH

The Environmental Protection Agency should foster legislation which will give it responsibility to:

1) Determine research priorities in the field of noise abatement;

2) Enhance its position in conducting research among the several federal agencies; and

3) Conduct its own research, if necessary.

LEGISLATION

The Environmental Protection Agency should recommend legislation to the Congress regarding performance standards for jet engine noise emissions. Noise standards regarding the location and expansion of airports should also be an Environmental Protection Agency responsibility. This participation should not be limited to the civil aviation sector. Military aircraft that operate daily on training and defense missions in urban areas throughout the nation have been manufactured with total disregard for noise attenuation requirements.

Very importantly, the Environmental Protection Agency should receive a right of review, including veto power, of all rules and regulations which would affect the environment promulgated by any federal agency. Furthermore, the Environmental Protection Agency, as the "Peoples Lobby," should request legislation which would require a statement of environmental quality control on any pending legislation before the passage thereof by the Congress.

Another area of legislation should concern itself with the development of Pollution Service Charges whereby the polluter would pay for the solution to his problem rather than the general public.

ENFORCEMENT

The various federal agencies now appear to have adequate enforcement procedures which can be utilized in cooperation with the personnel of the Environmental Protection Agency. Eventually the Environmental Protection Agency may wish to have its own enforcement agency to insure that the mandates of the people and the Congress are carried out.

In view of my experience with the Federal Department of Justice, I recommend that the Environmental Protection Agency take affirmative steps to request the Department of Justice to create a new division which would concern itself only with environmental affairs. The Department of Justice is a highly efficient litigative arm of the federal government and is staffed on a national basis. The skills of this new division could be well utilized to enforce any of the rules and regulations promulgated by the Environmental Protection Agency.

We applaud those legislators whose vision and concern with our environment led to the creation of this long needed public agency. As local officials we stand ready to assist you with the important and challenging work that must be done.

Thank you, Dr. Meyer. We certainly appreciate the opportunity of speaking here today.

Dr. **MEYER**: Mr. Councilman, that was a very excellent statement. Before asking the panel if they have any questions to direct to you, I must say that your last recommendation is one which I will recommend to the Administrator as one of the very early action items out of this hearing. I will see to it that Mr. Quarles, the Assistant Administrator for Enforcement, and the Administrator are given this suggestion as soon as we get back.

Mr. **DOSTAL**: Thank you, Dr. Meyer. I have heard of the provision before, and I was very enthused about it when I was able to get it to you.

Dr. **MEYER**: I am enthused about it, too, sir.

Panel? On my right, Mr. Hildebrand, do you have any questions?

Mr. **HILDEBRAND**: None.

Mr. **BARON**: None.

Dr. **MEYER**: Paul?

Mr. **DEFALCO**: No.

Dr. **MEYER**: Mr. Dietrich?

Dr. **DIETRICH**: None.

Dr. **MEYER**: Mr. Martin?

Mr. **MARTIN**: Mr. Dostal, in your suggestion, you are talking about federal enforcement and as a lot of—but because the problem of airport usage varies from locale to locale and the problem is severe in certain areas of the country and less severe elsewhere, don't you feel that the local enforcement and local regulations in the use of the airports and actually putting the burden on the airport operators would be more effective?

Mr. **DOSTAL**: Well perhaps it might be effective on a local sense. But most of the airport operators don't have standards upon which they can base a norm. This is where the Environmental Protection Agency, I feel, will be able to come forth with very concrete and suggestive proposals. If the EPA sets up priorities and sets up the standards, then the local operators will have something against which to measure. At this time they are being forced and pressured by the commercial interests to have—and expand the jet activity and it's when you have to balance the—the economic factors against the environment is where we are running into the problems. The local agencies are being actually pressured by the commercial interests, and they are abiding by these commercial interests because of the dollar value. And this is why I feel that we need federal standards on a national basis against which these local agencies can operate.

Mr. **MARTIN**: I agree with you there. I think we need federal standards and more local enforcement.

Dr. DIETRICH: I would like to ask a—ask a question of this witness. You made a specific recommendation that the idea of pollution service charges should be assessed against the polluter himself. Now would you think of this sort of thing as being applicable to the local airport operator because that's what you are discussing in the main in your presentation. And how—how would this—how would this fit into your view of the scheme of things as that operator as one of many operators across the country, but presume so many problems—

Mr. DOSTAL: Well perhaps I was trying to be a little too succinct here. A small charge on every single airline ticket is not going to be too detrimental to the air industry. A charge of that nature could be applied and that amount of money that would be raised could be used for research and development in retrofitting aircraft to quieter and cleaner engines. Perhaps even developing a new generation, fifth or sixth generation, of quiet aircraft engines. This is what I meant by the using of consumer pollution charges.

Dr. DIETRICH: Thank you.

Dr. MEYER: Thank you very much, sir.

Mr. DOSTAL: Thank you very much, Dr. Meyer.

Dr. MEYER: Is the Hon. Alan Cranston's representative, Mr. Dobie Jenkins, present?

Mr. DOBIE JENKINS: Yes, Dr. Meyer.

Dr. MEYER: Glad to see you, sir. I had a short visit with your distinguished senator in Washington the other day, and I am pleased to have you here, sir.

Mr. JENKINS: I spoke with him this morning, and he asked me to convey his thanks and appreciation to you and the EPA for your assistance in Washington. It was about two weeks ago.

Dr. MEYER: Right.

STATEMENT OF DOBIE JENKINS, NORTHERN CALIFORNIA FIELD ASSISTANT TO SENATOR ALAN CRANSTON

Mr. JENKINS: Dr. Meyer and panel:

My name is Dobie Jenkins. I am the Northern California Field Assistant to Senator Alan Cranston.

We have one small change, or change, between the statement we submitted on Friday and the statement which I will give you this morning for the official transcript, and that is that we want to save for a more detailed time the announcement about the legislation which the Senator wishes to introduce. And we will be doing that within the next few days, I think, perhaps in Washington. But if I may, I would like to paraphrase a statement which we did submit to save you a little time rather than reading the whole thing.

Dr. Meyer, ladies and gentlemen:

As the sponsor of major federal noise abatement legislation, I am pleased that the noise abatement panel has scheduled hearings in San Francisco. Thank you for this opportunity to state my views.

First, a word about the problem. Noise pollution is a growing national menace. The National Aeronautics and Space Administration has warned that by 1985 people on the street won't be able to hear each other talk. The International Standardization

Organization at its meeting this summer in Geneva predicted that every city dweller will be stone deaf by the year 2000.

Aircraft noise is an especially bothersome problem in the State of California. According to the FAA standards some 55,000 individuals live in "unacceptable" noise areas around the San Francisco International Airport which is the nation's fifth busiest airport with 149,000 flights annually. Over 120,000 individuals live in "unacceptable" noise areas around the Los Angeles Airport, which handles 219,000 flights annually.

Medical researchers and psychologists say there is mounting evidence that the high levels of noise to which we are more and more exposed have adverse cardiovascular, respiratory, glandular and neurological effects. According to testimony received at a recent Senate hearing on noise pollution, noise produces temporary constriction of the smaller arteries which could mean speeded up pulse and respiration rates. Steady exposure to loud noises results in hypertension, abnormal heart rhythms and ulcers. Laboratory animals have actually been killed by exposure to extraordinarily high levels of noise. One witness at the Senate Hearings testified that when pregnant monkeys were exposed to moderately high noise (80-115 decibels) for 10 percent of the gestation period, 25 percent of the resulting offspring were deformed.

To combat noise pollution, I have introduced legislation to curb both aircraft noise and general noise.

I also intend to introduce in early October further legislation to significantly increase the powers of the Environmental Protection Agency to control all the environmental effects resulting from the use of aircraft. At present control of aircraft environmental problems is split between the Federal Aviation Administration, the Civil Aeronautics Board, and the Department of Housing and Urban Development. In order to deal effectively with aircraft pollution problems, the different functions handled by these agencies should be centralized in the EPA. Centralizing authority in EPA will also free aircraft pollution control from agencies that unduly identify with commercial airline interests. EPA has up till now been environment-oriented while the FAA and CAB have been industry-oriented.

Last April I introduced legislation to require all older generation jet aircraft be retrofitted with devices that would reduce their noise output to one half of its present level. Older generation aircraft include the 707, 727, and 737, as well as the DC-8 and DC-9. Newer generation planes, such as the 747, DC-10 and L-1011, are now required by the FAA to operate at the noise levels which retrofitting would accomplish for the older generation planes. My bill also provided funds for the early retirement of older and noisier aircraft. The effect of my bill, if passed, would be to make "acceptable" the noise environment of 40 percent of those individuals now living in "unacceptable" noise environments according to FAA standards. Included in this group would be 22,000 individuals in San Francisco and 48,000 individuals in Los Angeles. The remaining 60 percent of individuals living in unacceptable noise areas near airports would have their noise environments substantially improved.

In July of this year, the Senate Commerce Committee held hearings on my proposed legislation on aircraft retrofit. I am now in the process of working out a bill with the Committee which I anticipate will be reported during this session of Congress. The legislation will emphasize the early retirement of aircraft, especially the very noisy 707's and DC-8's which are four times as noisy as the replacement DC-10's and L-1011's. The bill will also require airports around the nation to use flight procedures such as increased take-off angles to reduce aircraft noise. These procedures have been successfully tested at National Airport near Washington, D.C. Finally the legislation will authorize continued research and development of retrofit devices for three-engine commercial aircraft (727, 737, DC-9).

Aircraft noise in the past has generated the greatest number of citizen complaints to my office. It is equally important for our nation, however, to help control other forms of noise pollution which are growing in intensity.

Earlier this year the Administration introduced legislation to help cope with general noise pollution. I refused to sponsor that legislation because I did not believe it went far enough to meet the rising din of noise pollution. Along with Senator Philip Hart (D., Mich.) and Senator Mark Hatfield (R., Ore.), I introduced legislation to strengthen the administration proposal. Our bill would do the following:

1. The proposal would require the Environmental Protection Agency to set maximum legal noise standards for all equipment used in construction and transportation, and for any machinery using internal combustion engines. The administration bill would merely authorize EPA to set such standards.

2. The Cranston-Hart-Hatfield bill would also include all other noise-producing equipment "that would endanger public health." This would encompass such things as office and hospital equipment which are not covered by the administration bill.

3. The substitute measure would require the labelling of appliances and other noise-producing products used in the home to show the decibel level of the noise emitted. This provision would cover such items as dishwashers, vacuum cleaners, air conditioners and garbage disposals but would exclude radio and television sets (products which have as one of their primary purposes the emission of sound) and items producing "negligible" noise, like electric can-openers.

The administration bill does not provide for noise control of household goods.

4. The Cranston-Hart-Hatfield bill also has "a number of tough enforcement provisions not contained in the administration proposal," among them:

* Individuals would be permitted to bring class action legal suits against noise offenders if they believe EPA is negligent in enforcing the law. Private citizens do not normally have this power to enforce federal law.

* The Federal government would be required to demand that government contractors observe EPA noise standards.

5. The state and local governments could obtain 100 percent federal grants to establish their own noise control programs.

One of the major objectives would be to help them set up noise control standards for entire areas.

6. The Cranston-Hart-Hartfield bill requires an annual EPA progress report to Congress not called for in the Administration proposal.

7. More stringent state anti-noise pollution laws will be saved from pre-emption. California has already adopted noise standards for automobiles and other forms of vehicular transportation. In addition, there are now 43 bills pending in the California Legislature to control noise pollution.

The Senate Commerce Committee has held hearings on our bill and I am confident that most of its provisions will be included in legislation reported by the Committee during this session of Congress.

At the same time we legislate to control noise pollution we must increase our understanding of the psychological and physiological effects of noise. The Russians and the British have done more work in this field than the United States has. We should close this gap and improve our general knowledge of this problem.

I thank the panel for this opportunity to testify.

If there are any questions, perhaps I can answer them on behalf of the Senator.

Dr. MEYER: Thank you very much, sir, for presenting Senator Cranston's views.

Panel, on my left?

Mr. MARTIN: I have one question. How does Senator Cranston view this bill as far as EPA and DOT personnel in the standards setting area?

Mr. JENKINS: I believe that he would probably wish your agency, the EPA, to have the overriding authority as an environmentally oriented agency in cooperation with the DOT. But I think his intention is especially with respect to legislation he is now contemplating with regard to EPA responsibilities which would make them a primary agency.

Dr. DIETRICH: I noticed that you made reference to Senator Cranston's proposed bill and the Cranston-Hart-Hatfield bill, a provision to label household appliances with some indication of their noise-producing capabilities. Would you care to comment, if you wish, on the inclusion of materials for the control of noise that someone might go out into the marketplace and buy, such as acoustical tile or some other materials with the claim to have some benefit with respect to noise? Would they also fall in this category and require labelling?

I believe the legislation as now written, sir, doesn't go into that. But perhaps Dr. Meyer knows whether it extends to such noise pollution or noise control materials.

Dr. MEYER: The Administration's bill and the Cranston-Hart-Hatfield bill do provide for a labelling requirement for those items or devices which are sold specifically for the control of noise and must show their efficiency.

Mr. JENKINS: I see.

Dr. MEYER: So that is in the bill.

Mr. JENKINS: That was a detail that I knew was in the bill at this time.

Mr. Baron: Would you just clarify this statement about the exemption. In the case, for example, you gave an illustration in the State of California which has stringent automobile laws. I mean you are raising an interesting issue here of the setting of standards.

Mr. Jenkins: The Senator has used the example of the air pollution legislation of 1968 where California had to—to fight quite a battle to be pre-empted from the federal auto emissions standards adopted that year. We would desire a comparable pre-emption for state laws dealing with noise where they are more stringent than federal proposals as may be adopted.

Mr. Baron: Would this apply to—anyway this concept then, to the states as well? It probably would, then, and trickle down because the state doesn't control.

Mr. Jenkins: Yes. If these local agencies adopt more stringent —and I believe if the EPA would study them and—and state, "Yes, we believe these are more stringent standards," then those standards would apply rather than the federal standards. But the federal bill would not pre-empt these local ordinances, statutes, in the event that they were more stringent.

Mr. Baron: One other point. You—In the retrofitting, you speak of a 50 percent reduction in noise output. Just for clarification, could you translate that into decibel reduction?

Mr. Jenkins: I think the—the testimony was 40 percent—Oh, excuse me. I don't have, sir, the—the information on the actual amount of reduction which would achieve this level. These are progressive rather than arithmetic figures in terms of measuring decibels, as you know, and I don't have that specific scientific information as to from what level to what other level we would be going to in order to achieve a better environment for a certain number. I simply don't have it. I don't know exactly what that detailed decibel amount is called for. I believe it's in the legislation.

Mr. Hildebrand: Mr. Jenkins, one common argument that's raised against retroactive fitting of an older jet airplane, as you brought up and as you no doubt are aware is the high cost of this activity. Do you have any suggestions on who should bear the costs or how it should be apportioned?

Mr. Jenkins: In the original bill that the—the Senator was considering, it was thought that the airlines would bear—I think it was proposed that the airlines would bear this burden. That has been amended to propose some types of tax relief for tax—because they are not an appreciation allowance, but a special tax allowance, a tax break, in effect, for airlines, which go to this expense. I believe that's the way—the shape of the legislation right now. It is no longer simply a matter of, "Okay, you fellows are going to do it."

And at that time the proposal was estimated to cost a billion dollars. Well that was found wholly unsatisfactory, and the idea was perhaps to pass that cost along to consumers.

I think the Senator now supports—would support tax breaks, some form of special tax consideration where the airlines go to this expense.

Mr. Hildebrand: Do you have an estimate on what it would cost per plane?

Mr. Jenkins: No, I don't. It's a very large sum. It's a large sum.

Dr. Meyer: Any other questions?

Mr. Martin: This subject of retrofit is very interesting. How would the bill handle it? Now many times you can—you cannot retrofit an airplane just by putting a quieter engine on an airplane configuration. The configuration itself may rule out a substantial amount of the noise improvement on an old airplane. How would this bill cover, then, the requirement of all these older craft because at that point you have made them illegal, in effect, the retrofitting, and you have a multi-billion dollar airplane inventory sitting there. How would this bill then cover the requirement of a multi-billion dollar operation on the airplanes that are sitting out there now?

Mr. Jenkins: Well I believe that the Senators—and we have not discussed that particular question, sir—feel that where the—where the retrofit is impossible economically from the—from the retrofit is impossible in economic terms, and the tax break does not provide sufficient incentive, that, well, I just—I can't answer your question, sir, because we haven't discussed that in that detail.

Dr. Meyer: Hank, if you would just yield a minute. I think the witness did, indeed, say that the Senator was going to make some further announcements about his legislation in the near future. I believe this is going to be covered in his announcement in October.

Mr Jenkins: I believe so. We thought we might be prepared to announce more details this morning, but he chose, in a conversation that I had with him just before coming over here, to delete some references to those plans and do further detail on them. But I would like to give, if I may, to the panel and to the recording secretary the copies of the slightly amended statement.

Dr. Meyer: Very good. That statement in full will be included in the record.

Mr. Jenkins: Okay. If you would include that.

Dr. Meyer: We will include that one rather than the previous one.

I wish to express to the Senator again my thanks for coming and giving his views. We do regard his actions very highly and look forward to working with the Legislative Branch.

Mr. Jenkins: Thank you very much, Dr. Meyer.

Dr. Meyer: Thank you, sir.

We are honored not only by having a representative of the United States Senate representing the viewpoint of the Legislative Branch of the government—And I might say that although the Executive Branch and the Legislative Branch may appear to differ in degree or methodology, it is certainly apparent from the fact that the Administration does have a bill, the Executive and Legislative both are viewing this problem as one that requires action and that proper attention is being given on both sides of this government.

We now have also the honor of being favored with some remarks from the Mayor of one of the nation's largest cities. Mayor

Uhlman, it is a pleasure to welcome you, sir, and we look forward to hearing your views on how a large municipality or a public official deals with the noise problem. Mayor Wes Uhlman of Seattle, Washington. Mr. Mayor?

STATEMENT OF WES UHLMAN, MAYOR OF SEATTLE, WASH.

Mayor **Wes Uhlman**: Thank you very much, Mr. Meyer.

Dr. Meyer and members of this panel:

I am pleased to have been invited to appear before you to present a report about noise problems in Seattle and King County.

Across the nation, urban spokesmen speak seriously of dying cities, cities literally abandoned because they may be no longer livable. Cities die from a mix of diseases: pollution, physical decay, political Balkanization, racial turmoil, corruption, bankruptcy or sheer bigness.

How do we know they are dying? Just listen; you can hear it. Urban death has a loud rattle to it.

In New York, for example, it is not the foul water or air, the ugliness or the congestion, but the noise level that probably marks the threshhold of change from agreeable growth to decline of that city. Excessive noise in great cities is not only a symbol of them, but the ultimate symptom of their demise.

Seattle, like all great cities, is a noisy city; it exists rather literally in a basin of unwanted sound. Noise hurts not just the whole city but there is real pain for individuals. It would be more dramatic and probably more effective if I could report to you some statistics of "bleeding ears" in Seattle, but unfortunately ears do not bleed from sound impact abuse—they just stop registering sound. People also suffer a decline in their property values, students are cheated on their time for hearing and working in their schools, and a much broader segment of our population is simply made more ill at ease and their bodies and minds more fatigued.

Some knowledgeable people have suggested that people should protect their physical and psychological health from all this noise by wearing noise protection devices—just as some people have taken to wearing gas masks to protect against air pollution. This remedy is clearly unacceptable. Noise intrusions must be stopped at their source, just as we approach the control of air and water pollution problems.

In short, I would suggest that our sometimes senseless use of technology which first often aids the poor and the affluent also threatens to be our undoing. Our cities, built of the creed of more and better, must begin to be examined for the quality of their heartbeat, the noise that jams or soothes our senses.

I am also suggesting that Seattle and its environs has very typical noise problems. Our major airport has an average of 220 flights a day during daylight hours. We have a major freeway bisecting our city, and it accommodates an average of 160,000 motor vehicles a day in the downtown portion. Noise peaks at the airport affecting residences are measured in the 95-100 dB(A) range. On the freeway, peaks frequently approach 90 dB(A) levels. In both cases, the most disturbing feature is the intermittent intrusions: on the freeway it is the roaring truck, and at the airport it is the shattering impact of the low-flying jet.

Our city is built on six major hills, which profoundly affects noise levels at every hour of the day.

Noise control laws in Seattle are very general and for the most part not quantitative. The existing legislation has not been amended since 1961. Understandably, enforcement is poor. Our Police Department does not even own an appropriate piece of noise measurement equipment. Since January of this year, police officers have issued only 24 citations and have made only one arrest for noise offenses.

Nuisance noises, from machinery, gatherings of people, from music and from construction, are usually controlled by police persuasion, as it is impossible to prosecute such violations using objective measures, given our laws and resources. Yet these offenses are a growing problem in our city.

Of far greater magnitude of concern in our city is what I would call "Noise Blight." Noise blight occurs when there is an enduring source of constant and high peak noise in excess of 80 dB(A) measured in nearby living and activity spaces. Examples of noise blighted areas are the residential spaces adjacent to our freeway and in the landing and take-off sectors of our airport. These areas contain schools, substantial residences and businesses which are seriously blighted by the intermittent and continuing noise from surface and air vehicles.

Aircraft noise makes communication impossible for up to 90 minutes of each school day in at least one school near the airport. In another school, students and teachers more than 12 feet apart from each other must shout at each other because of the drone and roaring peaks of noise outside the school on the freeway. The combined effect of freeway and airport noise seriously restricts the conduct of classes in nearly 20 schools in Seattle and King County. Local acoustical experts estimate that noise intrusion above 45 dB(A) forces teachers and children to raise their voices and therefore constitute a serious misuse of teacher and student time, energy, and psychological resources.

Ironically much of this blight of the human environment in our city comes as a legacy of the generosity of the federal government. Our highways, our airports and indeed all jet aircraft are heavily subsidized by the federal government. Local government and individual citizens, however, must pay the damages and foot the bill for correction. I note that in Los Angeles, airport commissioners have committed local funds of about $200 million to destroy 400 acres of residences which are blighted by aircraft noise. Nearly 2,000 homes will simply be demolished because the noise blight makes them unfit for human habitation.

In Seattle, our Port Commissioners paid out over one million dollars in damage claims for noise up to January, 1971. Since January, 1971, the Port Commissioners have paid out $115,000. Seven more claims remain unsettled at this time.

These are the social costs of noise blight supported by the federal government. Millions more in real and psychological costs remain unassessed and unpaid in our schools and in private residences and businesses.

In the Seattle area there is a healthy and sophisticated awareness of noise problems. Nearly two years ago a quiet but determined woman, Mrs. Arthur Freeman, became the Paul Revere of Seattle regarding our growing noise menace. This lady gathered 250,000 signatures on a petition to do something about noise abatement. She succeeded in pressuring the Federal Aviation Agency to reroute jet flights over water instead of residential areas. The FAA, not to be intimidated by non-aviation interests, has been unable to enforce this approach alternative.

Since this time, citizens have been working with city and county officials to establish modern noise control procedures and standards. Last year we submitted a joint city-county noise control grant application to the Department of Health, Education and Welfare. The grant program calls for a full scale noise abatement program, including provisions for (a) community action and education; (b) model local legislation; and (c) implementation of a noise abatement program through existing local and state agencies. Unfortunately, this grant program has not been funded.

And at the state level, last year our state legislature considered a model noise legislation package, setting statewide standards and enforcement authority. This bill is unique among state legislative examples in that it integrates the control of all noise-making machinery. Boats and trucks and jackhammers are addressed with consistent and uniform methods and standards. One agency, the State Department of Ecology, would administer this proposed law. The law would also provide control for household appliances and related residential machinery. This later provision follows the simple rationale that industrial workers are relatively well protected from noise abuse in their jobs. But in our homes we can deafen ourselves at will—usually without recognizing it.

These state and local initiatives are only hopes, not realities, at this time. Nevertheless, these efforts are necessary and fully a part of the responsibility of state and local government. I emphasize that these efforts have gone for naught despite their importance and innovativeness. There has been little change in the steady growth of the noise, even though our plans for change are good. Our noise blighted areas get more intense and become more extensive.

I see little promise of the kind of change that is required until the federal government shows much more and much stronger leadership than it has shown to date. It is instructive to recall that despite good state and local attempts, nothing was done about air pollution until the federal government began to require standards and both required and funded effective state and local action.

There are some specific federal initiatives which will greatly assist us in our local efforts:

(a) Local noise abatement and control grants such as the one we have submitted must be funded.

(b) There must be careful and clear definition of local, state, and federal authority in noise abatement and control—hopefully along the lines established for air pollution control.

(c) Residential machinery, motor vehicles, recreational equipment, and other noise-making construction and industrial equipment must be required to meet stringent federal noise standards at the point of manufacture.

(d) All jet aircraft must be required to undergo a noise control retrofit program.

(e) The Environmental Protection Agency, not the FAA, should be given authority to control aircraft noise subject to FAA safety controls and review. The FAA has the responsibility to supervise and encourage aviation; there is little evidence the FAA can control aviation noise effectively.

(f) Federal highway funds must be made available to design and install proper acoustical barriers on all older state and federal highways in urban areas. The Environmental Protection Agency should be assigned to assure compliance.

These measures require little new technology as in the case of air pollution control measures. They do require money and a meaningful commitment of the legislative and administrative powers in the public interest.

Nation building, which has as its present point of concern saving our cities and urban areas from untimely death, must achieve again some of the tranquil character of the wilderness from which our nation sprang.

The behavior of the rats in the classic noise experiments should instruct us. Laboratory rats can be driven mad by noise. They lose their health, then eventually turn on each other. For us, the quiet message should be clear: a noisy and abrasive city breeds noisy and abrasive people—people more likely to turn on each other. Do we really want to be turned against ourselves by the din of our own works?

In closing, I commend the Office of Noise Abatement and Control, Environmental Protection Agency, for your efforts and wish quick success in helping Seattle and all cities return to the state in which we can choose what we want to hear and be able to really listen to only that which is pleasant to us.

Thank you very much.

Dr. **MEYER**: Mr. Mayor, thank you very much for a very forthright statement.

I have a comment and a question, but I will ask the panel first. Mr. Martin, on my left, and through to the right.

Mr. **MARTIN**: Just one question, Mr. Uhlman. When you talk about the local communities not being pre-empted via federal regulations, are you speaking now primarily in the operating requirements of the vehicles, which are also in the new manufacturing requirements? In other words, in your statement you have said that the federal government should regulate the manufacture of noise levels of new vehicles as they are manufactured at the source in the plant. Now when they are delivered to the state, are you saying the local community should also be able to set more stringent new vehicle standards, or is this just operational standards after they are in the community?

Mayor **Uhlman**: Of course we are probably the—one of the rare communities in this country that can set these kinds of standards since the Boeing Company operates inside our city, as far as airplanes are concerned.

No, seriously, to answer your question, there have to be national standards. There have to be overall standards. I would suggest maybe the base-line standards. I would submit that—that in addition local governmental agencies ought to have the right to decide that people that live inside those jurisdictions are going to live better than the minimum standard across this country in terms of noise. And I would apply that same principle to other elements of pollution.

Dr. **Dietrich**: That's a—I find that an interesting statement you just made, and I would like to hear you expand it a little bit because one of the questions that comes to my mind is as follows:

There's been a recent court decision in this state that suggests that perhaps in the area of education that some inequality in the quality of that aspect of life shouldn't exist, and I was just wondering whether you are really suggesting that we should have special noise—noiseless enclaves in one area, if that might mean that—that some other areas would then be forced to take the brunt of noise of certain commercial activities, let us say.

Mayor **Uhlman**: My understanding—I have not read the advance sheets on the California Supreme Court case relating to educational standards, but my understanding of that case is that there are certain minimal levels. There's a certain base-line level, and, if a community desires to, and the citizens of that community desire to, I believe that that case would not prohibit the citizens of that community from establishing a higher level of service in education to the students once we assure that there is a minimal level assured across the state.

I think the same principle would apply to noise pollution or water pollution or air pollution.

Dr. **Dietrich**: Thank you.

Mr. **Baron**: The—Do you have the standard noise code that most cities have where unnecessary noise is prohibited, and listing loud loading of trucks and poor muffling?

Mayor **Uhlman**: Yes. And it's literally unenforceable.

Mr. **Baron**: Because, as you said, it is qualititative?

Mayor **Uhlman**: Yes.

Mr. **Baron**: Is there any intent to enforce? Has this been substantiated in court action as unenforceable?

Mayor **Uhlman**: Well, of course, the police department and the prosecuting attorney's office have been fairly reluctant to bring cases. They have on occasion. But they have had very mixed —very mixed success in court, simply because it is qualitative. A rose by any color, I suppose, smells as sweet.

And you get in front of one jury and the—the noise may not be, in that jury's mind, obtrusive or in any way violate the statute. Frankly, I just don't think that this—this whole area of enforcement belongs in the police department in any city or in any entity of local government. We have—We have a very highly trained cadre of people who we call policemen in our society. They shouldn't be out making these kinds of judgmental actions. They ought to be enforcing criminal codes. And I suspect that in many instances this isn't the crime we are talking about.

They are civil penalties that ought to be looked at much more realistically to enforce these kinds of activities.

Mr. **Baron**: Did you see a dual enforcement of the police and the Environmental Protection Agency of some sort at any local level?

Mayor **Uhlman**: I think there would have—you will have to have some responsibility for enforcement in the police simply because you are going to get in some willful crime types of activity. However, by and large, the primary responsibility ought to be in—in some kind of an enforcement—I would suspect through hopefully multi-jurisdictional kinds of local agency enforcement as we have in the air pollution control act, dual perhaps.

Mr. **Baron**: And, finally, you said that the citizens, at least 250,000 signatures were on a petition, which is a substantial number of signatures, were concerned about noise abatement. Then your chief obstacle to an effective code is a lack of funds to develop and operate such a code?

Mayor **Uhlman**: It's really resources. I think this is true across the country. Cities are in deep trouble at this time in terms of their priorities. I can tell you for the next half hour to hour the kind of services that are being cut back in the great cities across the country through lack of resources, and they include vital services such as police protection, fire protection.

We are in the process now of doing everything we can to keep from shutting down a fire station in our city and putting together our next budget and this—Mayor Carl Stokes of Cleveland had to dismiss his entire class of police cadets through lack of resources.

So you can see with these kinds of pressures the question of noise and noise pollution as important as it is, many citizens in their prior advertising of the very limited local resources, feel that personal protection is perhaps on a higher echelon of those local resources than noise control.

Again, it's a question of priorities and local resources available.

Mr. **Hildebrand**: Mr. Mayor, you stressed the need for federal funding. Do you feel that city taxes are insufficient or improper for effective local noise abatement programs or they are not available?

Mayor **Uhlman**: Well I feel that they are proper. It's just a question of not being available. Cities across this country are creatures of the state, in the state of California the same as in our state, in Washington State. And that is that the state legislature can meet and abolish the City of Seattle and your state assembly can meet and abolish the City of San Francisco, and it won't exist as a city. So along with that comes a very tight control over fiscal resources. We can't tax commuters in our city, for example. We have 250,000 people a day who come in and commute into our city, and they don't pay us anything. We provide them the services so we have this very serious problem across the country of just inadequate resources, and the state legislatures will not give us the right to tax ourselves in many instances and, frankly, I think that this is a multi-jurisdictional problem. Noise doesn't stop at a city limit, North 145th Street, or whatever it might be. It's a multi-jurisdictional problem the same as air pollution.

Mr. **HILDEBRAND**: One more question. As you no doubt are aware, the technology exists for soundproofing of schools to eliminate the inefficiency of which you spoke. Some cities, notably New York and, more recently, Chicago and Boston, have undertaken comprehensive studies of their respective urban noise problems, looking for local solutions to some of the problems. Has Seattle contemplated undertaking such a study?

Mayor **UHLMAN**: Well we have—We are undergoing some soundproofing and we have undergone taking some means of attempting to protect the sanity of a classroom, but the point that I am trying to make is when you get into these older buildings, they become enormously expensive to do. The point I am trying to make is that for a number of years the federal government has undergone a very conscious effort of underwriting freeways. In point of fact, I would like to give you a dissertation if you had time, which you don't, on how, through a number of various federal efforts, there has been—there has been a deliberate destruction of the great cities. We can start with housing policies. But let's just take freeways, which create the problem.

Billions and billions of dollars have gone into freeways that create this problem of noise in urban areas. I frankly think that a modicum of that amount of money ought to be made available to help solve some of the problems that have been created by this conscious federal effort.

Dr. **MEYER**: Mr. Hildebrand and Mr. Mayor, you have brought into this discussion something we are vitally interested in and that's the economics associated with this whole matter. It has been said by some observers that a particular community's association with the source of noise might tend to give it a higher tolerance of noise than might otherwise be expected. And, of course, Seattle, being associated with Boeing Aircraft, would be expected to be a little bit more tolerant of the noise problem.

Mayor **UHLMAN**: I should point out it's a shrinking association.

Dr. **MEYER**: Yes, I know that. What you are saying is that that doesn't necessarily hold true in today's society. Also, more importantly, in this area of economics, I was listening to you and to the discussions here with the panel and realizing the terrible dilemmas we get into.

For instance, some cities, as you mentioned and other witnesses elsewhere have mentioned, are condemning property and paying for it through the right of eminent domain, and taking off the tax rolls sources of revenues because of noise, and yet have problems such as you mentioned of not having the revenue to deal with other sources of noise. In this case the airport exists and in condemning property around it and paying for it, it's causing expenditure of funds that have got to come from some place. Yet, you are saying that the city doesn't have enough money to do the things it ought to do.

So it seems to me we have got a real dilemma that we have got to come to grips with collectively at the federal, state and local level, as to how to reach a rational method of approach. And it's one of the things they are looking at in the study we are now doing. But we do not have any clear answers.

I think it's an important point that you have raised here. We may not have a solution, but we have clearly identified an issue.

Are there any other questions, panel?

Mr. Mayor, I sincerely appreciate your comments, sir, and one last thing, many of these points that you raised as suggestions are included either in the Administration's bill or the Legislative Branch's proposals. We hope we will be able to help you, sir.

Mayor **UHLMAN**: Good.

Dr. **MEYER**: Thank you, sir.

Our next witness is Mrs. Dianne Feinstein, President of the Board of Supervisors of the City of San Francisco. Mrs. Feinstein, welcome to our group, and we will look forward to hearing from you as another representative of an element of government.

STATEMENT OF DIANNE FEINSTEIN, PRESIDENT OF BOARD OF SUPERVISORS, CITY OF SAN FRANCISCO

Supervisor **FEINSTEIN**: Thank you.

Mr. Chairman, gentlemen:

I wish I could say "ladies and gentlemen," but obviously the EPA needs a little Women's Lib. Perhaps we can get that started, too.

Dr. **MEYER**: If the witness would yield to the Chairman for a minute, one of my deputies is Mrs. Elizabeth Cuadra, well known in the State of California, I believe. Also I would point out that my Executive Officer, who is sitting right over there, is Mrs. Sue Seidman, and then Mrs. Dade. So I believe we are fairly well represented in that area.

Supervisor **FEINSTEIN**: Fine. I didn't mean to put you on the defensive. I was just making a comment.

First, I would like to thank you for giving me this opportunity to testify before you. As you know, we have been far too slow in recognizing the symptoms of urban decay and diagnosing them; finding cures and effecting them.

We have much to do and not much time to do it in. The experts tell us that unless we find a remedy for noise pollution, the problems we are concerned with here today, we will literally be deafened by the pounding of pneumatic hammers, the blare of horns, the cacophony of buses, motor-bikes and heavy trucks.

There was a time, of course, and it was not long ago as historians reckon time, when the only sounds to be heard here, between the Bay and the Pacific, were those of the gulls, the trees, the wind and the water. Those sounds are still here, but how seldom we hear them. We, who live here, in this unique and cherished place, owe it not only to ourselves, our children and their children to restore the city to some semblance of serenity, but to the land itself which has given us so much.

As President of the Board of Supervisors, I have been particularly interested in the problems of excessive urban noise. I authored and last month submitted to the Board of Supervisors an anti-noise ordinance. This ordinance is now pending before the Health and Environment Committee, and is being carefully studied by a group of experts gathered together by the Department of Public Works. The ordinance, in its final form, will provide effective controls over sources of irritating and abrasive urban noises which beset up, and will be in the vanguard of community noise abatement programs in California.

To briefly outline the provisions of the ordinance . . .

In Section I, the Declaration of Policy states, "It is hereby declared to be the policy of the City to prohibit unnecessary, excessive, and annoying noises from all sources subject to its police power. Above certain levels noises are detrimental to the health and welfare of the citizenry and in the public interests shall be systematically proscribed."

The ordinance defines essential, technical and legal terms, such as "sound level," "ambient noise," "decibels," "non-stationary sources," "commercial and non-commercial purposes," etc.

The ordinance specifies two noise level limits.

"The noise level limit shall be the lower of (a) 5 decibels above the corrected ambient noise level taken over a period of 15 minutes at the time of day and location near that which a comparison is to be made." OR . . .

(b) ambient noise levels varying with respect to type of zoning and time of day. These levels are described in Table 1 of the ordinance."

We are working on an amendment to this section which will allow neighborhoods presently exceeding the proscribed limits, a period of grace to lower their levels.

Tables 2 and 3 delineate corrections to be made in Table 1 for certain types of noise such as "steady audible tones," "Whines or screeches," and noises of unusually long, or short duration. Here we have tried to take into account character of noise, as separate from amplitude.

The ordinance describes two modes of enforcement, one public through the police and one private through injunctions. Under the first, violations are deemed misdemeanors with fines not exceeding $500 and/or county imprisonment not exceeding six months. Each day a violation is committed or permitted to continue, constitutes a separate offense.

Because public enforcement is expensive and the Police Department is already over-burdened, we have included a method of private enforcement through injunctions against violators. It is our hope that legal assistance groups and ecology organizations will take advantage of this injunctive provision and become the principal guardians of the public's interests.

The ordinance restricts the sound levels of radio, television, and phonographs during night-time hours, so that they need not "disturb the peace, quiet, and comfort of neighboring residents . . ."

Use of any equipment, machinery, fan, pump, air conditioner, or similar device exceeding specified noise levels in the previously mentioned tables, is prohibited at the property line.

Waste disposal or garbage collection services and construction projects may not cause "discomfort or annoyance" to "a reasonable person of normal sensitiveness" residing in the area.

The ordinance provides for public hearings, which residents are invited to attend, to determine if exceptions can be made for extenuating circumstances surrounding a particular construction project.

In order to pay for the administration and enforcement of this ordinance, and to provide a record of equipment known to be excessively noisy, the ordinance contains licensing provisions for construction and industrial machinery.

The standard of reasonability, which has been established in the California courts, is applied to vehicle repairs in neighborhoods.

The ordinance contains an extensive provision for the regulation for both the commercial and non-commercial sound amplification equipment. In our opinion, regulation in this area does not abridge First Amendment rights.

The ordinance further specifies the type of noise measuring equipment and method of measuring to be used.

A final, catch-all provision proscribes excessive noise under virtually any circumstances.

It should not be assumed that this ordinance is an end-all solution to the problem of urban noise pollution.

Still needed are:

1. Comprehensive noise standards for building codes. Far too many of the more recently built dwellings in the City suffer from inadequate soundproofing and noisy heating, air conditioning and plumbing.

2. Strict federal standards for motor vehicles, including motor bikes, motorcycles, buses and trucks. These standards should permit even stricter state and local regulation. At present, state legislation, which is grossly inadequate, prevents local regulation of motor vehicles. However, it is our understanding that a decision from the State Attorney General's office may permit the enactment of stricter local standards.

3. Stricter federal standards and controls over airplane engine noise and flight patterns. Aircraft noises are among the most obtrusive and abrassive of all.

And, in that general category, I can't help but comment I also serve as a member of the Board of Directors of the Bay Area Air Pollution Control District. And we passed a set of standards that would apply to emissions of airplanes and we were wondering why the airlines didn't protest. And, of course, the reason why was that they immediately went in and got an amendment to the Clean Air Act to exempt them from state standards, and they were exempted to nothingness because there are no current federal standards. And what we are saying is, in the absence of these federal standards, giving states and local entities the jurisdiction to enact some standards. You can't have a vacuum. Gentlemen, if you people are unwilling to step in and afford an effective licensing mechanism of construction equipment, air conditioners, fans, and so forth, which will compel market modifications and adherence to federal standards—This is most important.

Our studies have shown the silencing and muffling devices which cannot—which are not used are not unduly costly but it will take compulsory orders, we are certain, to get them attached to construction equipment.

I hope that this presentation will be of use to you. And we in San Francisco really do look forward to benefitting from the results of this hearing.

I would be happy to answer any questions if I can.

Dr. **MEYER**: Madam President, thank you very much.

Before asking the panel if they have any questions, I would like to make the observation that your remark on measurement is one of major importance. You are quite correct. It's completely different from making a measurement in a specified method at a factory and have that same device located at the curb side of a large city or going up a hill where there are walls and large buildings and so on. And, of course, one of the purposes of this hearing is to discuss measurement technology. And I am glad you brought that in.

Another comment, pending legislation would give the EPA a responsibility for working with the cities and states to develop model laws and ordinances. And I was most interested in your description of this particular ordinance because, in addition to that responsibility, we have some responsibilities right now for defining those operations of the federal government which produce noises that are nuisances or otherwise objectionable.

We have been looking at International Standards Organization's recommendations. We will look most carefully at this San Francisco code along with some others, because just glancing at it while you were talking, it does offer innovative approaches that we will want to look at.

Supervisor **FEINSTEIN**: Bear in mind it hasn't been adopted yet. It's still in the studying stage.

Dr. **MEYER**: I understand. We have an expert in noise pollution and the law with us. I would like to ask Mr. Hildebrand if he has any questions or observations.

Mr. **HILDEBRAND**: One question and/or observation.

You discussed ambient noise in your ordinance. Do you foresee any problem in testing a community and you find that the noise level is too high but, being unable to determine—In other words, everyone in the community is making noise and you put it all together and, if it goes over your level, how would you—Would you fine everyone in the community at that point?

Supervisor **FEINSTEIN**: No. Obviously what this calls for is some study and perhaps adjustment of the tables based on existing ambient noise levels. We feel that we have got some information that is somewhat adequate, especially in night-time hours. What's the ambient level in various residential areas, and so forth.

In addition to this, Supervisor Pelosi also—and you will have attached to this ordinance a copy of a study of the task force which would be directed exactly at the establishment of some of these standards and clarifications. What we have been trying to do, Mr. Hildebrand, is get something on the record fast from which we can work and which would have interim controls. We obviously may have to adjust these controls based on our findings about ambients.

Mr. **Hildebrand**: And you stated that the test would be made at the property line. Does this also apply to apartments?

Supervisor **Feinstein**: Yes.

Dr. **Meyer**: The term "ambient" is one for which there are some accepted definitions in the acoustical community which don't necessarily fit the problem of municipal law. We are looking at your definition of the phrase which may be residual noise rather than ambient, because ambient seems to mean different things to people outside of the acoustical community. But it's an area that you ought to be on guard about. It may cause you great problems.

Supervisor **Feinstein**: You mean with regard to our definition of ambient?

Dr. **Meyer**: Any definition. It has to be very carefully spelled out. I believe, as Mr. Hildebrand said, it's obvious the ambient noise level at the Fan Francisco International Airport is quite a different thing from the ambient noise level in this room.

Supervisor **Feinstein**: That's correct.

Dr. **Meyer**: One would not necessarily want to say that one would agree that that ought to be the permitted noise level if it stayed within five decibels.

Supervisor **Feinstein**: And I think you should take that into consideration.

Dr. **Meyer**: We may want to try to come up with some approaches to residual noise—that's the noise level that isn't necessarily associated with the all-encompassing sources. You may want to reduce it.

Supervisor **Feinstein**: Yes, we do.

Dr. **Meyer**: You may want to pull it down. You may not want to tolerate what's now the ambient. You may want to come to something less than that.

Supervisor **Feinstein**: That's what we have done with the two levels. You take the lower of the two in the measurement.

Mr. **Baron**: It's difficult, of course, to analyze a comprehensive code of this kind. I would like to ask, though, what is the source of the modification of this code?

Supervisor **Feinstein**: Well this is an ordinance that was put together by a group of young attorneys who have been working with me in conjunction with acoustical engineers for me presentation to the Board of Supervisors. So you might say that this a citizen-designed ordinance, sir. And we suspect that it would go through many modifications. We certainly do. And it has started the ball rolling. And we hope to feed into it the results of this committee as well.

I know the tables on some levels have been challenged as being too low. And we must make some additional changes in our zones here, which we intend to do. But I think it's—it's a good healthy start and it certainly deserves a good deal of analysis.

Mr. **Baron**: Why did you accept 7:00 a.m. as the beginning time for noises of what we call social or necessary noises?

Supervisor **Feinstein**: Well, because it's generally the beginning of the working day. What would you substitute?

Mr. **BARON**: I am not asking—Well the question I am asking is why is 7:00 a.m. the beginning of the working day? Has this been established in San Francisco?

Supervisor **FEINSTEIN**: No, no. But I believe this is part of the timetable that we took from the model ordinance as a good suggested time to begin the working day.

Mr. **BARON**: Well the point I am raising is that some of these things from the—what you call the model ordinance and so on as we go into this business of developing ordinances and so on must be questioned and not accepted so blithely because there have been no statistics on how many people want to get up at 7:00 o'clock in the morning. Maybe they all do, or the majority of them do.

Supervisor **FEINSTEIN**: You would be surprised how many do, sir.

Dr. **MEYER**: Mr. Baron, are you implying that they stay in bed later or get up earlier and do the work? I am not sure I understand.

Mr. **BARON**: Well we are raising the question of a valid daytime noise which could impact homes, schools and so on. And this is an important point that I do not believe should be so permissive of daytime noise. Do you see a dual control that the Mayor of Seattle talked about? The police being ineffective? Not, ineffective, but not necessarily the best choice for law enforcement. This seems to be the emphasis in your proposed code. I am not quite sure because I couldn't have studied it. Do you see dual control?

Supervisor **FEINSTEIN**: Yes, we do see dual control. Obviously the person that's called in the nighttime situation in a residence where there's excessive noise would most probably be the policeman. And the person that works around machinery in terms of citing machinery where there is a health hazard might be the Department of Public Health. And I think that that should be the daytime emphasis.

To set up a whole new bureaucracy around the clock is going to be very costly to a city and county such as ours, so I—I do see dual control as being the—the most practical mechanism at this point.

Mayor Uhlman had a very interesting point and that is we don't want to divert vital police manpower from larger priorities.

Mr. **BARON**: Just one last comment or question. We in the East hear so much about the State of California having the toughest motor vehicle law and so on in the United States. And then we hear you talking about it being grossly inadequate and pushing for more enforcement. I just wonder if you would care to just comment on that for a moment.

Supervisor **FEINSTEIN**: Yes. Just listen. For a moment, just listen through these walls, sir, and I think that's a comment on that motor vehicle code. This is a modern hotel, built within the last very few years. And you can hear every truck that's going by. The measurement of the decibels along Van Ness Avenue probably range—Of course, it goes up and down when these trucks go by. I'm sure it's well between 70 and 90 decibels.

Mr. **BARON**: In other words, am I correct in saying that the

California law pretty much allows trucks to function at almost at the noise level at which they are—that they can create as manufactured?

Supervisor **Feinstein**: Yes, yes.

Mr. **Baron**: Thank you.

Dr. **Meyer**: The Chair would point out that yesterday—No, day before yesterday, in front of this hotel on the escarpment, the traffic flow counted at around 300 cars per minute, which gives you some idea of traffic flows in communities like this at 3:30 p.m. The sound level measured on the A scale varied between 80 and 82 dB(A), which I think my colleagues from Bolt, Beranek and Newman would indicate would be reasonably consistent with that traffic flow at that distance, considering the structure.

You might also be interested to note that inside one of the larger department stores—we won't give a commercial—it was 70 dB(A) at 4:20, which gives some idea of the contrast between inside the structure and outside the structure.

Dr. **Dietrich**: I would like to congratulate this—I would like to congratulate this witness, especially with regard to the nondegradation or provisions of this proposed ordinance. I think those are extremely important that any set of regulatory limits not become a license to suddenly fill up the unused space between what quiet we may have now at some limit. But I—I wanted to ask a question with respect to the motor vehicle statement that you made as to whether you feel that the problem is that the state's enforcement has just not been feasible or has not taken place within the city or whether you really believe that you really need to go out and enforce something which would make a much larger percentage of our population—Since we are all motor vehicle drivers, I think we must admit that that makes us—a large percentage of our population violators of the law.

Supervisor **Feinstein**: I think probably the best way of stopping this is licensing provisions at the beginning and then annually every vehicle has to be licensed so that at full operational status it doesn't violate certain standards. I don't know how much the Highway Patrol is actually stopping vehicles and testing them for noise. I couldn't comment on that. I was given the figure that less than one percent of the vehicles on the road have been in violation of state standards.

Dr. **Dietrich**: But eventually you assume that most regulations don't try and strike out or find a very large percentage of any population, regulated population, to be guilty of violating the regulation? I just wonder whether you felt that the problem related to the fact that it's often difficult for technical reasons to make measurements in accordance with the state code, within a state, in large cities, and San Francisco being an example, were not getting the amount of enforcement they might like—they might like to have and it might prove effective.

Supervisor **Feinstein**: I am sure this is true. If I could just slip in one other point which I meant to make and I forgot to. You can go into certain places on Van Ness, and you can get certain muffling devices which exacerbate the noises on motorcycles tremendously, and you pay $15 to $30 for them. Perhaps these should be made illegal within city areas.

Dr. **Dietrich**: You can do it more cheaply with a hacksaw, too. And I certainly go along with the thought that that should be illegal. But it is in the sense that it almost surely will fall afoul of the state regulations. But I am wondering when you strike out at the—criticize the state regulations for having only found a small percentage, one or two percent of the vehicles, at fault, whether it might be a worse—

Supervisor **Feinstein**: Whether it's the enforcement or the standards.

Dr. **Dietrich**: It might be that San Francisco's problem is that not enforcement is taking place here so that perhaps many, many violaters here go unpunished.

Supervisor **Feinstein**: That may be the case, but I think the State standards themselves need revision.

Dr. **Dietrich**: Thank you.

Mr. **Hildebrand**: Would you yield?

Dr. **Meyer**: Mr. Martin, will you yield to your colleague?

Mr. **Hildebrand**: One comment. According to the copy I have of the California Vehicle Code, Section 2331, the—the noise standard tested at 50 feet for California is 88 to 90 decibels, which I submit is quite high.

Supervisor **Feinstein**: We—We took the NASA study and we followed the recommendations in that study and passed a resolution memorializing that specific section. I know it's in the 2000 series. I couldn't remember the numbers. But that those two sections be amended and that at least a 15 to 20 percent reduction be contemplated.

Mr. **Martin**: Just a question. When you say 15 to 20 percent, are you talking about the total decibels? In other words, taking about 15 decibels off of your 90, or are you talking in the normal decibel reduction which is a weighted type of thing?

Supervisor Feinstein: Well if I had that NASA—It's on page 15 of that NASA study. The exact levels are there. I don't have it at the moment. But I believe it's off the 90.

Dr. **Dietrich**: Perhaps my recollection may have been of help. The numbers are in the 70's, so they would represent something like the 15 you discussed.

Supervisor **Feinstein**: Thank you.

Mr. **Martin**: Let me ask a question. I hear numbers always used and I hear a tremendous reduction. I know that the 10 to 15 percent sounds like a very reasonable number. But in a case of reducing noise of a vehicle, 10 to 15 percent in total decibels you are talking in fantastic quantities of reduction. Is San Francisco public willing to pay the kind of costs that might be involved to eliminate certain vehicles, to eliminate certain types of trucks, which might remove tax revenues from the San Francisco community? You know, to reduce 15 decibels is not from 90, and really a 15 to 20 percent reduction as is known in the acoustical field. This is quite a substantial thing.

Supervisor **Feinstein**: And I think there are a couple of ways of approaching it. One would be a time spectrum. Another would be the depreciable life of the equipment. A third would be a series of interim steps along the way so that perhaps at 1980 you have accomplished that total reduction, or whatever time factor is felt feasible. That would have to be for determination of the experts. I don't pretend to be an expert, just a student of this subject.

Dr. **MEYER**: Any other comments, panel?

Mr. **BARON**: Somewhere in here is a reference to the exclusion of utilities at nighttime noise, if I am correct. Do you recall that? It's one of the things that is exempt. Are you talking about emergencies and I just can't find the section rapidly. Maybe somebody else could.

Supervisor **FEINSTEIN**: Well I believe—

Mr. **BARON**: Emergency work. Section F. There it is.

Supervisor **FEINSTEIN**: Could you tell me the page?

Mr. **BARON**: Some kind of an exemption that would apply to emergency work by private or public utilities in restoring utility service. What I am driving at is there—is this the intention of this code to try to achieve a lowering of the—the state of the art of construction noise emissions?

Supervisor **FEINSTEIN**: Yes, that's the intent.

Mr. **BARON**: Thank you.

Dr. **MEYER**: I think one of the things that's bothering some of the panel members who are professional specialists in this field, Madam President, is that every time you double the acoustical energy, you get a 3 dB increase. Every time you reduce the acoustical energy, you get a 3 dB decrease, and what is worrying these people is when you talk about, say, 10 dB drop, you really reduce the energy release more than you would get a feeling from just that number. In other words, you have gone down for the first three dB. You have got half of the acoustical energy radiated. Then the next three dB is half of that, or one fourth, and the next three dB is a half of that. So you are down to about one eighth of the energy that was being released by the device.

Supervisor **FEINSTEIN**: Are you talking about, for example, a pneumatic hammer?

Dr. **MEYER**: I'm talking about a pneumatic hammer, a truck, or whatever.

Supervisor **FEINSTEIN**: Yes, right.

Dr. **MEYER**: So what you are talking about is very, very significant reductions in release of energy into the environment, which is what produces the sound in the first place.

Supervisor **FEINSTEIN**: Right. Right.

Dr. **MEYER**: And this is why some people begin to get very apprehensive when people talk about 15 and 20 dB reductions. They are really talking about tremendous orders of change.

Supervisor **FEINSTEIN**: And reduction in the energy producing—

Dr. **MEYER**: And if you think of something vibrating or moving and setting air molecules in motion to produce the sound waves and you are reducing the energy input of that source, this causes a real, real problem which is not insurmountable, but you have to know what you are talking about.

Supervisor **FEINSTEIN**: Yes, yes. And I wish my engineers were here and they were discussing this and they described the different portions of the jackhammer and that which could be and that which couldn't be, and I forget which is which.

Dr. **MEYER**: We certainly appreciate your coming and, quite frankly, I am most appreciative of the ideas in your approach to this. We hope you will stay and hear the rest of the presentations. I know you are very busy, but I hope you will stay.

Supervisor **FEINSTEIN**: Thank you very much, Mr. Chairman.

Dr. **MEYER**: Now I would like to ask Mr. Warren Bogess, representing another element of government. Mr. Bogess is chairman of the Regional Airport Systems Study Committee of the Association of Bay Area Governments. Glad to have you.

Mr. **WARREN BOGGESS**: Thank you, Mr. Chairman.

Dr. **MEYER**: Before proceeding with your testimony, I have a question addressed from the floor about the public paying the cost of reducing automotive noise. The individual submitting this says, "It should be the stockholders of the automobile companies who should sacrifice in the form of reduced dividends and profits."

I believe what Mr. Martin was saying—I may be putting words in his mouth, which I don't like to do—but I believe, if I heard you right, that you were saying that the public is not going to pay the extra cost in dollars, but in sacrificing the convenience or whatever was involved in changing of the mode of ability.

Hank, maybe you would like to at least comment on this one.

Mr. **MARTIN**: Sure. No matter how you look at it, whatever you do to the price of a product, it's going to be passed back to the public. That applies. This is to say you can't avoid this. But, in addition, when a community regulates things beyond what is reasonable and can make a vehicle illegal—And I am thinking of a commercial vehicle, a truck they have not permitted—the possibility of losing tax revenue by eliminating business from their community and since tax revenues are the underlying thing that keeps a community going, it's sort of contradictory to their actual needs. So this is the thing I am alluding to, also.

Dr. **MEYER**: All right, sir. Mr. Boggess?

STATEMENT OF WARREN BOGGESS, ASSOCIATION OF BAY AREA GOVERNMENTS

Mr. **BOGGESS**: Mr. Chairman, I am appearing before you today as the Chairman of the Regional Airport Systems Study Committee for the nine-county San Francisco Bay Area. And this really is in the form of a status report of what we are doing and where we are now, and I think should be of great interest to you gentlemen.

The Association of Bay Area Governments (ABAG) is a council of governments with a membership of 84 cities and eight counties in the San Francisco Bay Region. ABAG is the certified areawide planning agency and federally designated metropolitan clearinghouse for the 7,000 square miles and 4.6 million citizens in the Bay Area.

Several years ago it became clear that the Bay Area needed a systematic evaluation of aviation needs in order to compare these needs with regional goals and criteria and to select alternatives for aviation development that will respond to a wide spectrum of public interest and concern.

Funds for the Regional Airport Study are provided by local government through the Association of Bay Area Governments and the region's three major airports and under a planning grant from the Department of Housing and Urban Development. The data collection phase of the study was completed last summer and included forecasts of demand, ground access, airport and airspace capacity.

The second phase of the study, which is of primary interest to this hearing, includes the analysis of aviation-related environmental factors, aviation's effect on air quality, an analysis of its effect on the physical environment and land use and an evaluation and projection of aviation noise. Preliminary copies of ABAG's "Aviation and Noise Evaluations and Projections" are available for this hearing board.

Noise is currently the most critical environmental problem associated with aviation in this country. Public reaction to this "invisible pollutant" has been continual and voluble over a number of years. Reaction ranges from individual complaints to community lawsuits. Present dissatisfaction and concern for the future are so great that decisions about the expansion of existing airports or the development of new airports have, at times, rested almost entirely upon questions of noise. The public demand for both a continuing growth of air transportation and a livable noise environment indicates the urgent necessity for careful noise evaluation and planning.

Considerable study has been devoted to the measurement of aircraft noise and the interpretation of its effects upon people, both as individuals and as groups living in communities. Two general types of noise descriptors have evolved:

> Those concerned with the measurement of *single events*, such as takeoffs, landings, and overflights. Those concerned with the measurement of the *noise environment* resulting from numerous individual noise events.

For airport noise analysis, the evaluation of the composite noise environment is of primary concern. The particular measurement procedure chosen for ABAG's study is the *Noise Exposure Forecast (NEF)*. Aircraft noise loudness, quality, duration, frequency, and time of occurrence (day or night) are all included in NEF measurements.

The general noise environment in an airport vicinity can be visually described by the drawing of *noise contours* which are based upon NEF measurements. 1970 contours reflect a present level of traffic and noise activity. Contours drawn for a projected date use certain assumptions about future aircraft types, runway utilization, and airport use. Different combination of assumptions will produce a variety of alternative descriptions.

The 1985 airport contours used in ABAG's study represent a level of activity based upon the maximum capacity of existing runways at the given airport, with a defined aircraft mix. Not all airports, or airport combinations, as defined by the Regional Airport Study in eleven alternatives, were considered. This is because of the complexity of the process and the large number of alternatives included. However, the definitions and analytical techniques which were developed make it possible to focus on any specific alternative or airport at a later time.

Based upon factors such as noise complaint histories, speech interference criteria, subjective judgments of "noisiness," and the need for freedom from noise interference, the compatibility of different noise levels with various land uses can be evaluated. These interpretations of noise impact provide a guide for land-use and "people" planning around airports. The 30 NEF value generally defines the boundaries of areas where aviation noise is of some concern.

To give an idea of the actual impact which specific airports have, the University of California is calculating for the Regional Airport Study the land use of areas within the 30, 35, 40, and 45 NEF contours at San Francisco International, Oakland, and San Jose, using contours for both current 1970 usage and projected 1985 capacity. The amount and type of land and buildings which are affected by certain noise levels are being identified and can then be compared with the land-use compatibility interpretation chart. Again, this procedure can be applied as well to any other airport environment.

The 1985 forecast assumes that a large proportion of aircraft will be wide body turbofan aircraft, equipped with high bypass ratio engines, typified by the Boeing 747, Douglas DC-10 and Lockheed 1011. Further, the 1985 contours are based upon the assumption that existing (1970) turbine-powered aircraft will be retrofitted to meet 1970-71 FAA noise certification requirements for new aircraft. Minimum reductions in noise levels to meet FAR 36 (requiring an eleven EPNdB reduction in approach noise levels and a 2 EPNdB reduction in takeoff noise levels) have been assumed for four-engine turbofan aircraft. The contours do not reflect any tightening in FAA noise certification requirements, nor do they reflect any changes in operations that might be required to meet the new California Department of Aeronautics noise standards.

Of the three major civil airports, San Francisco International Airport (SFO) shows a projected decrease in noise exposure in 1985 if current (1970) runway utilizations continue. A further decrease will occur with a reduction in use of Runway 28 for takeoffs. These reductions assume only a modest increase in total number of air carrier operations for 1985 (approximately 15 percent). For Oakland (OAK) and San Jose (SJC), for which major increases in air carrier operations are projected by 1985, there are correspondingly significant increases in the size of the noise contours. For Oakland, the increase in land areas within NEF 30 and 40 contours is relatively moderate due to the large proportion of over-water operations on Runway 11-29.

The noise exposure forecast contours for the three general aviation airfields (Buchanan in Concord, Livermore and Hayward) show much smaller NEF contours than those for the major airports. This reflects, of course, the smaller volume of operations and very limited jet operations. The 1985 NEF contours for both Hayward and Livermore show considerable increases over the 1970 contours reflecting an increase in volume of operations and the introduction of business jet aircraft operations.

The NEF contours for the three military airfields (Alameda and Moffett NAS and Travis AFB) vary considerably in size reflecting the diversity in operations and aircraft types. Travis AFB contours are the largest due to the relatively high volume of operations of multi-engine aircraft.

Noise complaints arising from relatively high-altitude overflights (typically 3000 feet and above) in transitional airspaces have increased over the last few years and are likely to increase in the future as the number of flights increase and as the ability to disperse flight tracks decreases. Because of the relatively moderate magnitude of the noise levels compared to those appearing near airports, existing ambient noise levels in communities will have marked influence on the "noticeability" of overflights. This results in major differences in the impact of overflights among neighborhoods, and between daytime and nighttime periods.

It is suggested that there may be difference in people's assessments of the "appropriateness" of noise from takeoff and landing operations and of noise from high altitude overflights occurring in communities far distant from airports; such differences may explain why transitional airspace noise may result in more community complaints than might be anticipated by NEF criteria which has been largely derived from noise exposure in areas immediately adjacent to airports.

Steps for minimizing the impact of transition overflights include: Increasing the altitude of the overflights, shifting flight tracks to locations over urban areas already exposed to high levels of noise from surface traffic; changing transitional airspace altitude profiles so that lower engine power settings may be utilized; and reducing the number of noise intrusions by either reductions in number of operations or by dispersion of flight paths.

There are ways to control aviation noise and to coordinate community and aviation growth. This is one of the objectives of the Aviation Element of ABAG's Regional plan. Federal and State Noise Standards have recently been introduced, but many options still remain within their limits. Economy, efficiency and feasibility are considerations as well as are noise and other environmental considerations.

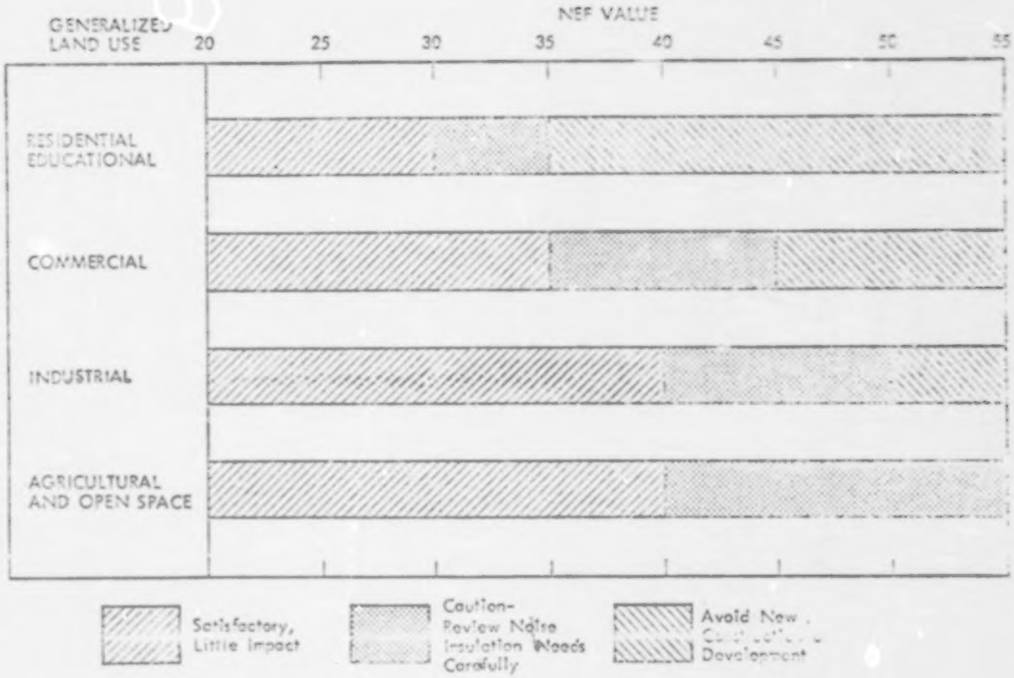
The noise data generated by the Regional Airport Study will have considerable impact on the decision-making process. We feel the development of the San Francisco Bay's Regional Aviation Plan is unique in that environmental issues, including noise, have been included as an integral and significant factor to be considered before the decision-making or alternative selection process takes place.

Dr. MEYER: Thank you very much.

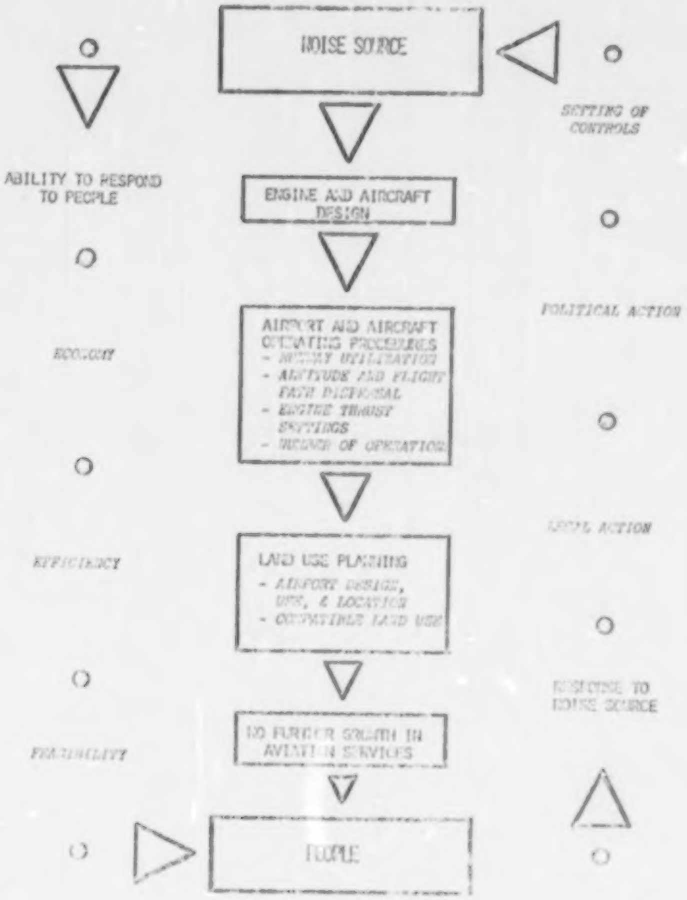
Mr. Martin?

Mr. MARTIN: Let me compliment you on what you are doing. I think I should point out one thing about NEF's, having been involved with their development and living myself in—right under a flight path off Kennedy Airport in New York. So I am quite aware of that. I live in a 40 NEF contour area. However, I would declare myself as being in a virtually unobjectionable area

SIMPLIFIED LAND USE INTERPRETATIONS OF NOISE EXPOSURE FORECAST VALUES



NOISE CONTROL OPTIONS


NOISE SOURCE
SETTING OF CONTROLS
ABILITY TO RESPOND TO PEOPLE
ENGINE AND AIRCRAFT DESIGN
POLITICAL ACTION
ECONOMY
AIRPORT AND AIRCRAFT OPERATING PROCEDURES
- RUNWAY UTILIZATION
- ALTITUDE AND FLIGHT PATH DISPERSAL
- ENGINE THRUST SETTINGS
- [illegible] OF OPERATION
LEGAL ACTION
EFFICIENCY
LAND USE PLANNING
- AIRPORT DESIGN, USE, & LOCATION
- COMPATIBLE LAND USE
RESPONSE TO NOISE SOURCE
NO FURTHER GROWTH IN AVIATION SERVICES
FEASIBILITY
PEOPLE

because I am not directly underneath the flight path itself. I am just about a half a mile off to the side.

COMPARISON OF APPROXIMATE LAND AREAS WITHIN NEF 30 AND NEF 40 CONTOURS*

AIRPORT		YEAR	YEARLY VOLUME AIR CARRIER OPERATIONS	APPROXIMATE LAND AREA WITHIN NEF CONTOURS,* SQ. MILES	
				30 NEF	40 NEF
San Francisco International	(1)	1970	333,435	19.4	1.8
	(1)	1985	382,000	11.3	0.6
	(2)	1970	333,435	16.3	1.2
	(2)	1985	382,000	8.8	0.4
Oakland International		1970	58,805	3.8	0.1
		1985	221,000	4.6	0.3
San Jose Municipal		1970	52,171	3.6	0.3
		1985	117,000	5.8	0.5

*Exclusive of land within 1970 airport boundaries.

(1) 1970 Runway Utilization.

(2) Projected runway utilization for allowable takeoff crosswind component of 20 knots.

NEF's have a way of being spread right across a whole community. You can plan airports very effectively by preferred bands or takeoffs and landings, and the NEF's to the sideline of half a million can be very reasonable to live under because you don't really get that much noise.

Mr. BOGGESS: You don't get the wallop that you get when an airplane goes directly overhead.

Dr. MEYER: I am going to come back to that in a minute, though, because there are some people who disagree with that viewpoint. But I will now go to the extreme right and ask Mr. Hildebrand, and then come back this way.

Mr. HILDEBRAND: No questions.

Mr. BARON: I don't know if probably this is the place to go into it. I just understood that the baseline for the NEF of which you have questions of acceptability in itself can be questioned. And I am just wondering if you are aware of this?

Mr. BOGGESS: Well we are aware of it. I also am a member of the seven-member Noise Committee which was formed by the California State Legislature a year and a half or so ago, and we have promulgated noise standards for the State of California which presumably will take effect unless the federal government pre-empts us. And we fully assume that they will. But the legislation was about as loose as you can get in that it charged the Committee with trying to find out or determine what sort of a—we call it CNE noise exposure level that a reasonable person should have to take. And so the first definition the Committee had to try to come up with—And Mrs. Cuadra was the study director on that study—was to define a reasonable person and this is where you get into all sorts of trouble.

I was speaking to the faculty at one of your local colleges discussing noise, and one of the professors told me that he lived in

Walnut Creek, which is on Victor-6 Airway and all the eastbound flights leaving San Francisco go over Walnut Creek. And his hobby was listening to bird calls. And he felt that all overflights should be discontinued in the Walnut Creek area so that he could listen to bird calls.

Well I don't think this is our definition of a reasonable approach to noise control.

On the other hand, the Mayor of Seattle was—was complaining about 225 departures and arrivals at Seattle Airport in a day. And Los Angeles International has 1,800. So the residents in the vicinity of Los Angeles International most certainly have a valid complaint. And somewhere in between, I guess, lies the truth.

Mr. **Baron**: What disciplines were involved in establishing this question of acceptability, or what a reasonable person can be entitled to?

Mr. **Boggess**: I think in our work we started with a level of 45 decibels as being a borderline of acceptable noise level. And since the typical California home shields, we assume, or we were told, at least, 20 decibels, the results of our study indicate that the noise exposure around an airport should not exceed 65 decibels. We tried to face up to three criteria in selecting this 45 living room noise level as being a level which would not interfere appreciably with conversation nor sleep nor television watching, which apparently are the three great areas of concern, at least with California residents. And we had our eye on these three areas when we arrived at these levels.

Mr. **Baron**: Did you distinguish between comfortable level and acceptable level?

Mr. **Boggess**: Well I think that we did not try to define a comfortable level, because we assumed that a community has a stake in aviation activity and that a community should be asked to absorb something, at least, in return for what that activity does for their city.

Merced, a Valley town over near Fresno, has on its immediate—immediately outside the city Castle Air Force Base. The approach path for landing at Castle is directly over downtown Merced. Now these people—But Castle Air Force Base also provides the maximum economic impact to that community. If you were to remove the air base, you would remove a large share of the business that is transacted within that city. So Merced has learned to live with Castle Air Force Base and they have accepted it as a vital part of their economy. And so they, when an airplane goes over, they stop talking for a minute and then they resume their conversation when it goes by. And you hear very few complaints from the City of Merced.

The City of Seattle, I'm sure, in spite of what the Mayor says, has learned to also live with their industry because they depend upon Boeing Aircraft for a large part of their economy.

So I think we assume that a city or a community does have a stake in the aviation activity that goes on in and around their community. And so they may not be able to be totally comfortable although, on the other hand, they shouldn't have their lives totally discombobulated by air—aviation noise, either.

Mr. **Baron**: The real controversy, as far as what we call environmental protection is concerned—And I think that all of us should be aware of it—and that is what the price is that we must pay for the economics of—of sources that produce noise. And up until now, of course, the price has been any price. This business of tax revenues, it is true that you may lose tax revenues of a certain source, at least one way or another. Certainly in New York City we are losing tax revenues. We don't make that city quieter by corporations moving out and so forth.

Dr. **Meyer**: I think that leads to a couple of things that are pertinent.

One, Mayor Uhlman used a very good phrase, which I have made note of. That's "noise blight." We have talked about urban blight. But it's a very good description of something that ties in with what Mr. Baron has pointed out, and that is a blighted condition. Whether it's comfortable or not, it still may be blighted.

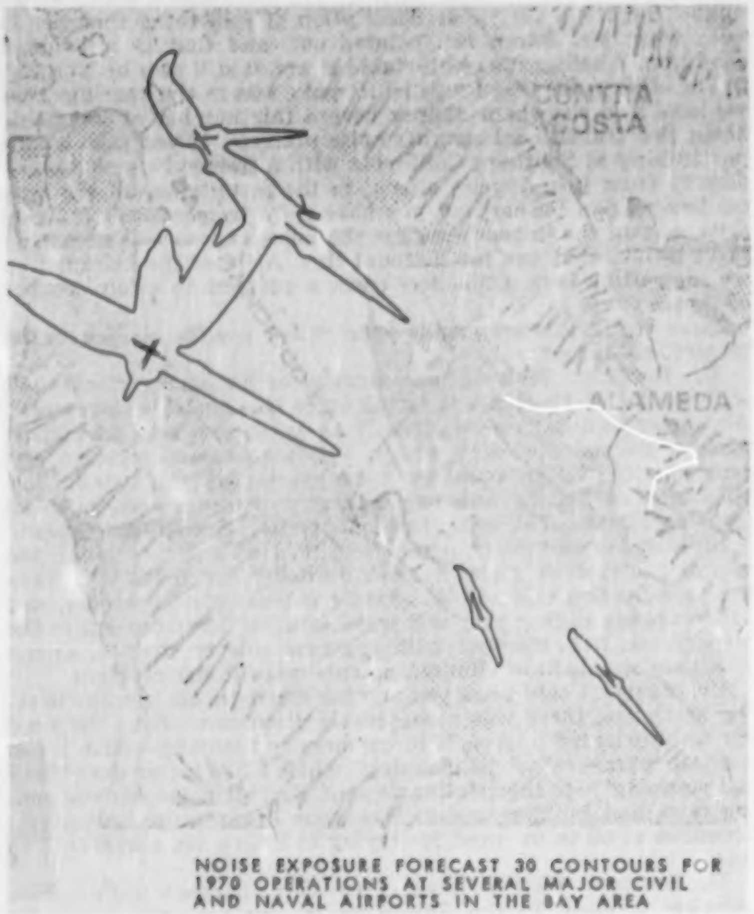
The other point that I wanted to make was in the hearings that we have held elsewhere, there's been a fair number of comments about this transitional aircraft noise problem. If you take a look particularly at Southern California with a tremendous population density from Los Angeles almost to the mountains, all the way out beyond San Bernardino, you have got a tremendously built-up area, so that the impact area for the noise exposure is greater. I don't believe that one can discount this. At least the information we are getting is that this does cause a problem to a fair number of people.

Have you in this area made some rather specific studies on the transitional noise?

Mr. **Boggess**: Well we have worked or had many discussions with the FAA. The FAA is facing up to this problem themselves. And prior to this time an aircraft on an approach to an airport made a normal approach with a 500-foot-a-minute descent and created a lot of noise problems as he approached the airport. The FAA now is looking and has instituted in some areas a much more rapid rate of descent. In other words, an airplane comes in quite high over approach point to an airport, and this calls upon the pilot to exercise greater skill, admittedly, but that's what they are paid for and this will bring their planes in much higher over urban areas and then they will make a rather steep descent to the airport and this, together with the new quieter engines, should go a long way toward eliminating this transitional problem.

Dr. **Meyer**: Could I ask you another question, sir? In our hearing at Dallas, there was considerable discussion about the need for an integrated approach to community planning—And I will use your phrase—"people planning" which I like better than "land use planning"—to the relationships of aircraft noise control, zoning laws and building codes. Has your organization given any attention at all to the need for trying to evolve some approach to this?

Mr. **Boggess**: Well we have—Our—Our approach to the whole aviation problem in the Bay Area is, number one, to ideally project how many flights will occur, how many passenger movements will occur, in 1985 if there are no constraints introduced of any sort and after having arrived at those projections, then



NOISE EXPOSURE FORECAST 30 CONTOURS FOR 1970 OPERATIONS AT SEVERAL MAJOR CIVIL AND NAVAL AIRPORTS IN THE BAY AREA we begin to introduce the constraints such as land use planning and noise and the possibility of the construction of new runways on our existing airports, and this sort of thing. And certainly when we pull it all together, which we have not done yet—This study won't be completed until the first part of next year. And, incidentally, we are going to hold our series of public hearings, also. When we pull it all together we hopefully will be able to arrive at the exact impact of all these constraints in a package against the possibility of being able to meet all these aviation demands. We may find that we can't even come close.

On the other hand, we may find that we can. But the construction industry has to be pulled into this thing. Mrs. Feinstein was complaining about the noise in this hotel. I would submit to you that the people who built the hotel also have a responsibility to soundproof this building, knowing full well that 300 cars a minute are going to be passing out here on Van Ness Avenue.

So we have to look at all sides of this. You can't penalize just the aviation industry, nor anyone else. You have to take the whole gamut into account.

Dr. MEYER: Right. Panel, any other questions?

Thank you very much, sir.

Our next witness is Mr. Richard Nagel, a City Councilman from El Segundo, representing the League of California Cities. Glad to have you with us, sir.

STATEMENT OF RICHARD NAGEL, LEAGUE OF CALIFORNIA CITIES

Mr. RICHARD NAGEL: Thank you.

Gentlemen, I have been sitting in the audience and listening to the testimony. I think everything's been said that I was going to say, but for the sake of being on record, I will go through it anyway.

Dr. MEYER: We are happy to have it, sir, if you wish to summarize it, or however you want to handle it. But I would like you to know that sometimes repetition makes the points stick a little bit better. So go right ahead, sir.

Mr. NAGEL: Man today is largely a product of his environment. The senses we have are those we have developed in order to survive in the relatively contemporary primitive world. Our ability to detect sound warned us of danger and prepared us for flight or combat. Man-made noise didn't become a problem until man began to interrelate in villages and hamlets. With the invention of power machinery and mechanical means of transportation the comparatively quiet domestic activities which characterized urban life gave way to the noisier industrial revolution. This resulted in a steadily increasing spiral of noise level. Dense urban centers attracted large industrial complexes which, in turn, generated more noise. Levels increased to the state where many communities attempted to enforce some type of statutory regulation on the more noxious sources. Noise regulations are not new to cities. As a matter of fact, Julius Caesar was bothered so much by noise that he banned chariot driving at night. Today the level of everyday noise that the average American is exposed to is more than twice that of the level in 1955 and the noise continues to mount, with the noise of jackhammers, trucks, automobiles, air conditioners, lawn mowers and an endless list of new and old offenders.

As often happens with a slowly encroaching evil, it takes a major outrage to raise public concern. This has been amply provided by the advent of the jet aircraft and lately culminated in the refusal of Congress to finance the greatest noisemaker of all time, the SST. At Los Angeles International Airport alone, a twenty square mile area of predominantly residential property has been determined to be non-compatible for residential uses. In my city, El Segundo, the entire community is exposed to aircraft noise ranging from 80 dB(A) to 95 dB(A) depending on how near to the airport we live.

It was the noise—airport noise problem that involved me in the noise pollution problem. The people were simply saturated with noise and they wanted relief. Many civic action groups were started. As the acousticians say it, we had reached the level of noise at which "vigorous organized protests" were being made. We felt it imperative to act but no apparent course of action was open to us. We embarked upon a program of probing and inquiring and it appeared necessary to attack the entire spectrum of community noise.

A noise ordinance must be adopted and all existing ordinances reviewed for compatibility with it. The first place the city should look for offenses is within its own operations and activities. Trash collection, street construction, street sweeping and other noises should be reduced to acceptable levels. The Police Department should be instructed to enforce motor vehicle noise codes if they exist; and if they do not exist, they should work with their state legislatures to create them. An educational campaign should be mounted through all the means of communication available to the city. This campaign should encompass the need for noise abatement, the methods and the enforcement techniques that will be used. Noise standards should be incorporated in the zoning ordinances to prevent adjoining non-compatible uses. Building codes should be adopted to insure adequate sound insulation between dwelling units of apartments, and where appropriate, to insure adequate sound insulation of interior areas of both apartments and single-family residences from especially loud exterior noise sources.

Building department officials from California cities are presently working to develop uniform standards for sound insulation and methods of construction to reduce not only people noises but the noise of plumbing and heating or air conditioning equipment as well. Some cities have found it attractive to designate Quiet areas in the community, possibly a park or other open area, where all noisy mechanical equipment is banned. Many of the citizens frequent these areas as a refuge from the noisy world in which they live and work.

Maximum noise level requirements should be included in specifications for equipment purchases, construction contracts and refuse contracts. These specifications may restrict the time of operation to avoid the evening hours when people are trying to sleep as well as restrict the noise level.

Traffic flow through the community should be evaluated and, where necessary, synchronize signals and avoid the stopping and starting which produces so much noise and exhaust fumes. Zoning restrictions, as presently applied by most cities, limit the uses of any particular zone. This is done with the thought of avoiding conflicting uses, such as a smoky tannery in a residential neighborhood or a boiler factory next to a hospital. This same motive of protection from unpleasant by-products should certainly be extended to noise. It is as easy for the zoning code to state that C2 uses shall not generate more than 55 dB(A) at their property line as it is to prohibit certain other undesirable by-products in that zone.

Difficulty occurs in an area which is now developed and is in a transitory phase from one use to another and in areas where poor planning has been the practice. It is extremely difficult to go back and undo these faults. In this case it may be well to set a noise level that all can live with and then reduce it progressively when gains can be made.

It seems relatively well established that 40-45 dB(A) is an acceptable level for private offices, 35-40 dB(A) is desirable for sleeping rooms and any noise sustained above 70 dB(A) for any appreciable time is going to cause complaints from those exposed. Yet in the average California type of building construction, these levels are allowed to be exceeded in most buildings. High exterior noises may be attenuated by the use of tight fitting double-glazed windows, weather stripped doors, strategically located vents, insulated walls and ceilings and attic space rather than flat roofs. Interior noise may be reduced through proper location and selection of plumbing, acoustical party walls in apartments, apartment construction that either does not place someone else overhead or adequately soundproofs the floor. These methods are well known. It is even possible to obtain a great deal of relief in existing housing. Most housing is built by a person or firm other than the one that will eventually occupy it. The builder usually has no interest in adding costly features such as soundproofing that won't be as visible as say the gingerbread turned posts on the front porch. In other words, he doesn't feel that he can make a profit on it so he will not voluntarily put it on. Before building codes became concerned with the safety of a building, many builders were using 2 x 3's for studs and as few of them as possible until they were stopped. If noise standards are to be included in building codes, it must be done by the controlling agency, the city. The International Conference of Building Officials is presently working to add these sections to the Uniform Building Code. The revised sections of the code must then be adopted by the cities as needed.

Selected members of the city staff should be trained in the use of sound measuring equipment, familiarized with the regulatory ordinances and trained in the techniques of reducing noise. Each police patrol car should be equipped with a sound meter and each patrolman should be trained in its use. The police department will have responsibility for the enforcement of the people noises, such as loud hi-fi's, automobiles, motorcycles, after-hours home repairs, etc.

The building and safety department or other administrative staff should have responsibility for industrial noise, air conditioner noise, public address systems, etc. Citations should only be written when all else fails; often times a verbal request to the violator is sufficient to stop the noise. Only in those cases where repetitive violations occur or when the violator ignores all warnings should citations be issued.

The city should be prepared to administer advice when necessary, especially in the case of industrial noise, and if necessary they should provide the offender with a list of consultants available in the area to provide professional advice. The noise control officer should constantly work with the industry to encourage and help them to lower their noise levels which will, in turn, reduce the ambient noise level in the community.

Those cities located near airports will undoubtedly find that airplane noise is their major source. No discussion of noise problems would be complete without a discussion of jet aircraft noise. Aircraft noise is further complicated by the many jurisdictions involved in the solution, some of these being the municipality or county which owns the airport, the airport governing board, the State Department of Aeronautics, the airlines, the aircraft manufacturers, the Federal Aviation Agency and the various municipalities surrounding the airport. Each of these organizations share a varying degree of responsibility for the solution of the jet noise problem. Because of the complexities involved, the following recommendations will be general in nature and direct themselves to the differing problems of existing airports and new airports.

For existing airports land use conversion and control is an oft mentioned bromide purported to solve all the noise problems of an airport. In reality, where non-compatible land uses already exist, little can be done in any reasonable time period to alleviate the nuisance short of massive conversion of existing uses through the power of eminent domain. The responsibility for the tremendous costs of the conversion has not been identified or resolved. It is my opinion that those who create the problem should pay for its solution; however, no private industry could afford the costs involved.

To give some idea of the magnitude of this conversion, Los Angeles International Airport would require the acquisition of approximately 20 square miles of residential property. The costs at this airport alone would nearly pay the costs of converting the entire United States commercial aviation fleet to quiet engine installations.

Some measure of control over the expansion of the airport should be held in the planning department. Airports should be an integral and important part of the community master plan. This plan should include all elements of the transportation requirements for the airport. The airport and the FAA should be encouraged to utilize all operational controls under their jurisdiction to reduce noise. Engine run-up schedules and locations should be selected to minimize noise. Adequate acoustical suppressors should be utilized. A tight discipline with respect to airport approach and departure procedure should be enforced. Flight patterns and altitudes near airports should be arranged to avoid unnecessary flights over populated areas. Flight crew training flights should not be conducted at airports which are noise sensitive. Noise should be monitored to determine the effectiveness of remedial practices and to determine the scope of the problem. Noise standards or limits should be adopted to provide a control over noisy aircraft and to provide statistical data for use in the planning effort.

It would be difficult to effectively plan an area taking noise into consideration when that noise level is in an increasing transitory state. Planning requires the knowledge of existing noise levels and a program for the control of future levels.

For future airport development, many of the above recommendations also apply. In addition, strict zoning controls should be set up and enforced to prohibit the construction of residential uses, schools, churches, hospitals, rest homes and other noise sensitive land uses. It is advisable to apply extremely conservative judgment in the designation of this compatible noise area to be certain to provide the operational and planning control over expansion of the airport.

A projected noise contour map of a proposed airport will be furnished by the FAA on request. Information required for the analysis is the basic airport plan, zoning pattern, types of aircraft, flight paths and frequency of schedules. Noise standards should be adopted early and enforced rigidly. The problem is much easier to avoid than it is to correct.

And, finally, legislation should be promoted on a state and federal level to set maximum standards for noise emissions of consumer products such as lawn mowers, vacuum cleaners, blenders, garden tractors, garbage disposals, etc. Limits should also be set for construction equipment such as compressors, tractors, jackhammers, pile drivers, etc. The primary place to control noise is at the source and the source is often beyond the reach of the local municipality. With all factors brought to bear, most cities can be quieter cities within a reasonable period of time. As a guide, the Quiet Cities Committee of the League of California Cities has furnished the following suggestions to all member cities. Each city should:

1. adopt a policy statement for reducing noise in the community as part of a broad approach to environmental quality control.
2. develop a master plan of noise impact which is part of each element of the city master plan.
3. adopt a noise ordinance to prohibit unwanted and unnecessary sounds of all types within the community.
4. Review their existing ordinances which relate to noise control for compatibility with the above.
5. undertake a study of excessive noise sources in the community.
6. develop a noise enforcement and regulation program and consider assigning an existing staff member or creating an administrative position within the city to be concerned with noise problems. Such a staff person could be in the Planning Department, Building Department, Police Department, Administrative Office or Environmental Control Division.
7. review their own functions and activities to make sure that

noise, such as construction, refuse collection, and street sweeping has been reduced to the lowest possible level.

8. enforce the motor vehicle code as it applies to excessive noise.

9. conduct an educational campaign consisting of civic group presentations, news releases, studies and reports to inform citizens of the dangers of noise and the actions each person can take to help reduce noise pollution.

10. incorporate noise standards in zoning ordinances which will prohibit incompatible land uses with respect to noise.

11. adopt building codes to insure adequate sound insulation between dwelling units of apartments, and where appropriate, to insure adequate sound insulation of interior areas of both apartments and single-family residences from especially loud external noise sources.

12. consider the development of "quiet zones" in special areas of the city, perhaps in already existing recreation areas. All forms of noise would be controlled so that people could visit and enjoy solitude as part of their recreation and leisure experience.

13. include maximum noise level requirements in specifications for equipment purchases, construction contracts, and refuse collection. Where specific noise levels cannot be set, specifications should require that vendors state maximum noise levels expected to be produced by their equipment and/or operations.

14. review and reevaluate their traffic flow systems to synchronize signalization to avoid traffic stops which produce excessive noise, and to adjust traffic flow to achieve noise levels acceptable to surrounding areas.

15. seek to develop regional planning agreements for zoning and soundproofing to reduce noise incompatibilities across city boundaries.

16. review county and regional comprehensive plans to identify noise environmental impact and develop alternatives for the control of major noise sources. In any single function county or regional plan such as transportation, airport development, highway development, etc., the same provisions should apply.

17. contact state and federal officials to convey their concern over noise problems and encourage residents to do the same. Many aspects of noise pollution require state or federal action and governmental officials at all levels should be aware of public need for a solution to noise problems.

What then is left for the federal government? The following suggestions are very important for the well being of all people:

1. reduce the noise level of existing jet aircraft as soon as possible and by all means available.

2. require all federal construction projects to conform to local noise regulations.

3. regulate the noise level of recreational vehicles in national parks.

4. prohibit the federal government from pre-empting state laws in the noise pollution field.

5. require maximum legal noise standards for construction and transportation equipment and internal combustion engine machinery.

6. expand regulatory powers to include office, hospital and other noise-producing equipment that would endanger public health.

7. require that household goods and appliances be labeled as to the level of noise emission.

8. allow individuals to bring class-action legal suits against noise offenders.

And I believe that was brought up by the representative from Senator Cranston's office.

I realize that these recommendations are not new. In fact, every one of them is embodied in law or pending legislation. But I say to you, then, to press for the earliest implementation of these. Very recently a high-ranking FAA director requested that we not involve ourselves in further crisis policies in noise. But what is our choice when we deal with a bureaucracy that only seems to respond to crisis. The birth of EPA was also the result of a crisis, and that was environmental pollution. The airline industry is unable to build or expand their much-needed airports because of airports' neighbors who have lost faith and air distrustful. And I believe this is a crisis in transportation. Air and water pollution threatens our very lives and this is certainly a crisis. It is gravely important that you people do whatever is necessary as quickly as is prudent to avert these crises.

I believe copies of the Quiet Cities Committee report of the League have been previously supplied to you as part of the testimony.

Dr. MEYER: Correct. Thank you very much.

Panel?

Mr. HILDENBRAND: No.

Mr. BARON: A clarification of this business of pre-emption, which seems to be a theme that recurs in this meeting today. Could you clarify this question of local pre-emption or federal pre-emption of local standards?

Mr. NAGEL: Well I think perhaps we are talking in areas of—of equipment or noise sources, noise generators, that cross state lines, much as the Interstate Traffic Commission. We are talking about local standards which can be escaped by a company going and getting a court injunction to apply federal standards because the federal government is a higher level of government. I think that federal government should set minimum standards but, if a local entity wants to set tighter standards, I agree with Mayor Uhlman that that community has a right to set standards which are above those that are minimum for other parts of the country. If we want to live in a quieter environment and cleaner environment and perhaps provide a little better surface transportation for our citizens, I would think the state should be forced to hold to a minimum norm.

Mr. BARON: One point about a quieter jackhammer. There are some quieter ones in the market place, as you know. I just realize you took an example, but, the local community could conceivably require the use of barriers in the case where equipment is not designed to be as quiet as the community wants it to be.

Dr. DIETRICH: I wonder if the witness would be willing to answer a question I have on documents that we have here called the Model Noise Ordinance, League of California Cities. Is that your organization?

Mr. Nagel: That was the document that came out of the committee that I chaired this last year.

Dr. Dietrich: Thank you. We have had a witness this morning who testified, as you know, that the City of San Francisco is looking at a modification of this for its own noise-control purposes. And I thought in comparing the two documents the proposed regulations for the city and this legal document that—the League document only provides the restrictions on noises which are in excess of the ambient by 5 db or more and sets no absolute limits. Could you comment as to—In order to have a provision which allows one to insert any numerical values for that, could you comment as to why that kind of regulation was not included in this?

Mr. Nagel: The regulation is included, but in a different form We define "ambient" in a quantitative manner further on in the ordinance, and we did this for one purpose: that no two cities have the same characteristics. An industrial city is going to have a slightly higher ambient than one that is completely residential. And the ambient—and the ambient noise level for us in that ordinance would have to be established by some type of a noise survey, either by in-house people or by professional acousticians. And then that becomes the baseline for this 5 db regulation.

Dr. Dietrich: I see. It's my understanding that the purpose for the generation of this model noise ordinance was to assist communities, particularly those smaller communities for whom this level of effort in coming up with this is just not likely to come about. And I just wonder whether you are telling me now that you believe that this is something—the way this ordinance reads, the model ordinance reads that it will—would require some sizable specialized talent to enforce.

Mr. Nagel: No, I don't think I am telling you that at all. In fact, I think the very reason, for instance, that the County of San Francisco is going to more complex methods of enforcement is probably because they have more staff and more expertise in this field that can go into these 15-minute observations and define the character of the noise and everything. We want to keep our noise ordinance very simple so that a city, say, of 5,000 or 10,000 can do it with existing staff and also have no more expensive equipment than the $525.00 noise meter that is available on the market which doesn't really take an expert to use. It takes a reasonably intelligent person and about a half an hour and he can be a man who can operate that instrument and make a reasonably good noise survey.

Dr. Dietrich: Thank you. I didn't want to misunderstand you.

Mr. Baron: You raise this question of ambient. In the first place, it's my understanding that the standard associations have not yet defined how one establishes an ambient. Correct me if I am wrong.

Dr. Meyer: That's reasonably correct.

Mr. Baron: The second question is am I to understand that this model code is based on—on the fact that, if a state, we will say, is noisy, then the—it is accepted as having a high ambient?

I raise the question because the Environmental Protection Agency is trying to protect the environment and the human being in that environment, and though it may sound illogical—And I don't want to go into a debate—but it seems to me the protection of the environment for human beings should not be too far apart, and there are—there's a question here of if you have an undesirable "ambient," once defined, that such an ambient should be reduced and we should not be thinking only of the intrusive noise above the ambient. Otherwise you are locking in an undesirable level to begin with.

Mr. **Nagel**: Well by reading only the noise ordinance, Mr. Baron, you can fall into a bit of a trap. You have to take the noise ordinance in context with the entire Quiet Cities Report. And that is that, first of all, the city has to establish a policy of noise abatement. You have to establish some goals. What do they want their noise environment in their city to be, and the noise ordinance is only one of the tools that is used to attain that. By no means is the city frozen to the ordinance or those numbers once they adopt it. They may adopt the ordinance with a little higher ambient than we desire this year and then work with the violaters in that area and try to lower their levels and next year come back and try to lower—knock it down five more db's. But it has to be taken in the context of the frontal attack through the zoning ordinances. Saying that a C2 zoning is not 65 db at the property line or an M2 is not going to generate anymore than 70 db at the property line and then allow for these known values and see where they can bring the levels down in having the staff working with the violaters and working together so that eventually the—the goal of the policy is to decrease environmental noise.

Mr. **Baron**: Thank you.

Dr. **Meyer**: Thank you very much. Sir, you have raised some of the real problem areas in this discussion here, and I appreciate your participation, sir. Thank you, sir.

Mr. **Nagel**: Okay.

Dr. **Meyer**: Next I would like to ask Mrs. Bly, who is a City Councilwoman from Palmdale. I hope my staff has got this right, which I see they have.

Mrs. Bly, we will look forward to hearing from you.

MRS. ALBA BLY, CITY COUNCIL, PALMDALE, CALIF.

Mrs. **Alba Bly**: Dr. Meyer, panel:

We have a unique concern. Mr. Mayor of Seattle, Wash., we don't want your problems. We are trying to crusade before the problem rather than after the fact.

My subject is the proposed Palmdale Intercontinental Airport.

The proposed expansion of the Los Angeles Airport into Palmdale was announced in July 1968. The proposal calls for operations of SST and Hypersonic planes on 18,000 acres in the heart of Antelope Valley. There has been much controversy over the location of this airport and the resulting effects caused by the environmental impacts.

The California State Department of Aeronautics held a hearing in Palmdale. The Palmdale Elementary School District presented testimony by Dr. Paul Veneklasen, an acoustician, and Dr. Karl Kryter, a physiological psychologist, indicating that the schools and children were in jeopardy. The noise impact was not considered in the decision of the State Department's decisions. The FAA held an informal hearing regarding airspace. In the final decision, noise was alluded to as needing possible study.

The Environmental Quality Study Council, an advisory group to Governor Reagan, came to Palmdale, held a hearing and advised that the State Department of Aeronautics re-hear the case, taking into consideration environmental concerns, especially noise.

Congressman Brown entered into the Congressional Record that the Palmdale Airport should be returned to the drawing-board. Four Congressmen (including our local representative), all members of the Subcommittee on Science, Research and Development, held a Congressional hearing in Los Angeles incorporating all aspects of the proposal. The Los Angeles Department of Airports continues to repeat "all objectionable noise and air will be kept inside the airport boundaries" and that seems to be good enough to satisfy any jurisdicting authority so the approvals go on!

However, some of us feel that noise is still a major concern to our valley. The proposed location of the airport is four blocks away from the residential area on the south side and the planes will take off over the residential area on the west. Our valley is approximately 2,600 feet altitude, surrounded by mountains and foothills on the south, west and north, with some buttes on the east. The air is of the quality which allows sound to carry for long distances, with a south, southwest wind generally, and an east, northeast wind about eight percent of the time. There are nine communities within the valley totalling a population of approximately 140,000. The indicated flight paths, which have not been officially decided, and keep changing according to arguments, the runway locations which also seem fluid, and the problem with altitude and temperature affecting the height of flights all influence the noise exposure of the residential areas.

Noise will be a factor! Not just from airplanes, but from the entire result of 100 million passengers per year and a projected influx of three million residents. A Los Angeles County spokesman stated that a 32-lane freeway bumper to bumper would not be sufficient to handle the ground traffic. A rapid transit is being proposed as an additional ground carrier. A plane every 28 seconds would be the projected flights on a 24-hour basis. The V/STOL transportation may well create an aluminum overcast.

Secretary Volpe's Statement of Findings indicates (even with the alternating runway locations and various flight paths) that one school and 950 homes will have to be relocated and/or soundproofed. It is apparent though that all ten schools in Palmdale would be drastically affected by the disturbance of teaching time; the safety of youngsters would be in jeopardy as warning bells, whistles, and verbal shouts may well not be heard. Not hearing automobile horns and car movements would endanger pedestrians. Approximately one-fifth of our population consists of retired and elderly people scattered throughout our residential areas. Noise effects on the elderly have been well researched.

If we can use the Los Angeles Airport, and others across the country, analyze their problems, and overlay them onto the proposal for Palmdale, taking into consideration the planes of the future, the effect on our valley would cover an area of not less than ten miles north and south and 20 miles east and west. The Outdoor Noise and the Metropolitan Environment Study issued by the Los Angeles City Planning Commission verifies this. Add to this the information base on Dr. Veneklasen's sound contours and the land use projections from the U. S. Department of Health, Education and Welfare computed from the Peat, Marwick and Livingston study contracted by the Los Angeles Department of Airports. It is obviously apparent that noise would be a factor great enough to inundate the entire Palmdale area—eliminating people.

Antelope Valley presents a unique way of life to its residents. The conditions of the valley are conducive to nearly a year-round outdoor living. If sound proofing and sound controls become a necessity, this way of life could not continue. Churches, homes, and businesses would all be affected throughout the community. Local parks, backyards and playgrounds would become obsolete.

There must be control in the field of noise. In setting these controls, the concern for physical and psychological reactions, tolerance levels, attenuation at the location and the way of life must be considered. Numbers on a sheet of paper do not equal true consideration and assessment of all peculiarities of the local environmental and ecological factors, i.e., Antelope Valley with its ring of mountains, air qualities, wind direction and the tolerance of residents vs. their way of life. Each project necessitates assessment on the spot.

Noise control minimums may be a blanket ruling across the United States, but as a protection for the people who are directly affected by airport or ground congestion noise, locational controls must be determined and enforced. This control must also be placed in the hands of an agency that is *not* set up to promote noise impacting projects such as aviation.

Instituting controls is a step forward. Let's do it well with as much technical and expertise knowledge available using input from laymen who become affected citizens. Then let's enforce the results regardless of the cost . . . It may mean a life . . . It may mean a whole community!

Thank you.

Dr. MEYER: Mrs. Bly, thank you very much.

Mr. Martin?

Mr. MARTIN: No.

Dr. MEYER: Dr. Dietrich?

Dr. DIETRICH: I was interested to hear the amount of testimony that you have made on the aspect of noise and outdoor living, because we had a witness earlier today describe Californians as primarily concerned with the quality of indoor noise in the environment, listening to TV, radio, this sort of thing. And I wondered whether there would be an opinion on the other side of that issue. Would you say that, in your—that your location is unique in this sense?

Mrs. BLY: As an outdoor living location?

Dr. **Dietrich**: Yes.

Mrs. **Bly**: Not necessarily so. But we probably do have more countable days of the year where we have an outdoor situation.

Dr. **Dietrich**: Thank you.

Dr. **Meyer**: Mr. Hildebrand?

Mr. **Hildebrand**: I would just make one comment. Perhaps something we should realize is that, along with the noise problem, a closely associated problem is the population explosion. And if we keep producing more and more people, we are going to need bigger and bigger airports and more airplanes. And so I would just comment that the population explosion is related to the noise problem. Is there—And I would ask you, is there an alternative plan for the airport in your area that would not necessarily dump it on another community?

Mrs. **Bly**: One of the restrictions of the PL 91190 is to study alternate locations, which at this point in time has not been produced. However, I understand there is some work also being done on readjusting flights, number of passengers per plane, number of flights per day, and so forth, out of our existing airports, which may well solve a great deal of the problem you just stated earlier.

Mr. **Hildebrand**: Thank you.

Mr. **Baron**: Well you have answered it, because there seems to be also controversy as to whether or not landing patterns, flight takeoff patterns, use of percentage—percentage use of the plane, and so on, can cause a significant improvement in the situation. You believe that other than quieting the sources, that these operational techniques and planning techniques can modify the problem?

Mrs. **Bly**: Yes. I think this is—should be a concern of the management.

Mr. **Baron**: Thank you.

Dr. **Meyer**: These are very important areas that need a lot of attention. Hopefully in our New York—or rather in our Washington, D.C., hearing, where we are going to be talking about technology and economics, as well as talking about regulatory roles, we are going to look at this question of what can be done by the airlines with regard to improved carrying capacity and so on.

I would make one observation which some people may be surprised at. I just made a quick calculation of your 20-mile by 10-mile area that's impacted, or would be impacted. We tend to think of all these problems as being new and arising primarily from the existence of the jet airplane. But back in 1952 to 1953 some studies were made at Fort Worth, Texas, with regard to the area impacted by noise at levels over 80 to 85 dB(A) equivalent from the operation of the then B-36 airplane. It will probably surprise you to know that it was 245 square miles. What I guess I am saying is we have had it with us a long time. It didn't just come with the jet airplane. And we ought to learn something of how to deal with it.

Thank you very much. I will pay careful attention to some of the highlights of problem areas when I meet with some of our other agencies.

Mr. **Baron**: You mentioned something about the use of the input of laymen involving these schemes. I wonder if you—you could just very briefly elaborate on that?

Mrs. **Bly**: Well I am not a technical person in the field of noise by any means, but I do have a profession and I feel that professional people or technical people becoming involved with what they are working with and what they see the problem to be. For example, as I referred to numbers on a sheet of paper. And they overlook the individual layman or a group of laymen in any field who get the result of their numbers on a piece of paper. And this result of the people or the citizen or the layman is, many times, very different than the anticipated result that occurs from the number of—on the piece of paper.

Mr. **Baron**: I happen to agree with you and in arriving at these numbers on a piece of paper, it is a calculated decision that the individual does not exist; that only a statistic exists.

Mrs. **Bly**: Right.

Mr. **Baron**: I am glad to hear you say that.

Dr. **Meyer**: In a standard-setting activity in relation to noise, that dB(A) will be involved in, and we intend to get the widest cross-section of inputs from people, from professional groups, from the public, such as her, and from what might be described as "the laity." All of us are lay people in one way or another, as the witness has pointed out.

Thank you very much, Mrs. Bly.

Mrs. **Bly**: Thank you for listening. And I appreciate your concern.

Dr. **Meyer**: I would now like to ask Mr. A. M. Man of Barrio Planners if he would come forward. Mr. Man?

STATEMENT OF A. M. MAN, BARRIO PLANNERS

Mr. A. M. **Man**: I am Alec Man. I am a member of a group in East Los Angeles, California, known as Barrio Planners. And I just finished typing my statement this morning at 4:00 o'clock, 4:00 A.M. this morning, so I don't have enough extra copies to give you people. And if I appear not to be coherent, it's because, after I did that, I got on the plane at 7:00 and so forgive me if I—if I ramble or don't sound like I have all my faculties stitched together.

My comments today are concerned mainly with the information gathered by an independent environmental advocacy group, the "Barrio Planners," of East Los Angeles, regarding a federally funded busway project along the San Bernardino Freeway in the City and county of Los Angeles.

The Environmental Protection Agency head, Mr. Ruckelshaus, and Secretary Volpe of the Department of Transportation received copies of the Barrio Planners report, "Impact on Impact" on the "Final Environmental Statement on the Proposed Express Busway on the San Bernardino Freeway."

The Barrio Planners report on the busway project was done because we helped acquire, design and develop the vest pocket park that is adjacent to the existing Southern Pacific Railroad track, the San Bernardino Freeway and the proposed express busway lanes. The report was the work of six persons, all volunteers, who are intimately involved with communities of East Los Angeles. Some of us live there; others work in the area, while all recognize it as a man-made environmental disaster area. We attempt to give professional assistance to residents organizations requesting our help as the East Los Angeles neighborhoods try to protect themselves against further environmental assaults by private developers and federally funded programs.

Impact on Impact was done in our spare time because we all have regular paying jobs during the day. The present EPA deadlines are highly unrealistic for concerned citizen groups who may wish to rebut the "Final Environmental Statement" of the agency requesting a federal grant. Because we are unfunded the costs of our report came out of our own pockets, putting us at a serious disadvantage with heavily budgeted government agencies who are applying for grants. Handicaps such as this delayed us, causing our report to reach Secretary Volpe two days after he approved the grant application of the California Division of Highways and the Southern California Rapid Transit District. Our problem in meeting the deadline for "Final Environmental Statements" became even more severe when the California Division of Highways discovered that we were opposing their busway application to the Department of Transportation. What had been a friendly and cooperative attitude in assisting us with right-of-way maps and engineering drawings, hardened into a refusal to let us attend meetings of the Highway Department with the Southern Pacific Railroad Company concerning right-of-way realignments for the proposed busway. We were informed that the meetings were a "private matter" between the railroad and the Division of Highways.

One cannot ignore the past actions of the California Division of Highways in displacing over 16,000 persons or 3,000 families in constructing the six freeways that pass within a 1½-mile radius of central East Los Angeles. In our report we give noise level data taken at 15 East Los Angeles public facilities that are adjacent to the San Bernardino, Santa Ana, Pomona, Santa Monica, Long Beach and Golden State Freeways, all of which are subject to excessive noise even during non-peak traffic hours.

The "Final Environmental Statement' didn't consider or even mention the setting of noise standards for railroad or busway equipment that will run through two parks in El Monte and the Barrio Planners vest pocket park in East Los Angeles. Railroad-generated noise is not presently a problem along the San Bernardino Freeway corridor, because the Baldwin Park rail line of the Southern Pacific Railroad is nor dormant; however, the railroad plans to activate this track up to 20 major freight trains per day. The activation of the rail line will follow the realignment of the tracks to accommodate the busway, with funds from the California Division of Highways and the Department of Transportation paying for extensive railroad retaining walls and trestles.

It is because of this application of federal money to railroad relocation and construction that standards for noise abatement should be set by the EPA for rail equipment. Joint landscape screening by the Division of Highways and the railroad should be considered so as to spare residents from the view of locomotives, freight cars, buses, trucks and automobiles.

Other serious failures of the Division of Highways and Southern California Rapid Transit "Final Environmental Statement" can be anticipated by the reader when he discovers the following sentence on Page 10 of Section IX of their statement: ". . . Because of the present urban development, wildlife and wildlife habitat are not known to be affected, nor are any streams having fish resources involved."

With the observation that all natural settings have been destroyed within the freeway corridor, it was a simple matter for the Division of Highways to completely ignore consideration of available alternatives to building the busway. On Page 14 of the "Final Statement" under the heading "Alternatives to the Proposed Project," the only consideration given to a busway alternative is one short statement: ". . . A mass rapid transit facility is also a possible alternative; however, the proposed busway appears to be the most logical and feasible project for this corridor at this time."

The Baldwin Park Line of the Southern Pacific Railroad goes through the communities of El Monte and San Gabriel, finally terminating in Los Angeles' Union Station. Since Union Station is the transition terminal for the pending downtown mini-bus program, the existing rail line offers a transit alternative never considered in the "Final Statement" of the Southern California Rapid Transit District and the California Division of Highways.

Another alternative to the busway that was not considered is the management of freeway traffic in a different manner. "Public Law 91-604, Section 110(a) (2) (B) requires the inclusion of land use and transportation controls as a means of meeting the federal primary and secondary ambient air quality standards. To comply with this requirement, in view of automobile emissions and air quality in the Los Angeles Basin, it may well be necessary to limit the use of automobiles on the freeways (by entrance fee, by classification or by other means) and to obtain buses which emit less pollution and noise than those now in use. One could create busway lanes on all our existing freeways and reroute feeder buslines to better serve the public need.

One cannot on the basis of the draft report form a favorable opinion regarding the merit of the project as proposed. It is therefore recommended that the legal requirements of Public Law 91-190 and 91-604 be included in a more complete environmental evaluation of the project and that a new evaluation report be made available to the public . . ."

The present administrative and legal arrangements requiring submission of an environmental statement by the government agency requesting the federal grant assures the writing of inaccurate, self-seeking and self-serving reports by the government agency pursuing the grant monies. Contracts should be given to independent groups.

And here I make a pitch for the Barrio Planners because we have architects and engineers. So I will lobby a little bit on this while I am up here. But for objective environmental analysis by local persons, competent to conduct such impact studies, and the

—from the several environmental reports I have read that have been submitted by the agencies requesting the grants, they are—they are frequently—they frequently make a mockery of the—the basic—their basic—what we should—when they should be objective. They are very far from that. And I think this was the case with the Palmdale report. It was a disgrace.

It's been the case with other reports I have seen. It would seem that if we are going to have—if we are going to have an analysis on—on a pending project that means anything, even the contracting agent—the agencies that's attempting to get the grant should not even have the authority to pick the independent analyst to do the—do the evaluation because if this happens, the results will be obviously very much as they are now. They will be so watered down as to be completely meaningless.

The other thing I would like to say is that having—having come up here today, as I did, on my vacation time, I think it would behoove the panel to consider and I hope bring back a recommendation that hearings such as this might well be held on Saturdays and Sundays so that we can get—and evenings—so that we can get the citizens to come out. The Bay Area has many, many conscientious and dedicated private citizens who are putting in all kinds of time. And yet it's like most people, they are holding down jobs and they are not able to come. And I am sure that—Now I am not throwing no barbs or—or stones at the people that are here today. I would almost stake my life on it that most everybody that's here is probably here from an agency. And this—this, of course, is while it's good and we are glad to have agency people here, we need—we need the citizens here or also sometimes the watchdogs and the innovaters and the—the gadflies that make government more operative and more responsive, and I think that this is—this is a program we have at the local where hearings are held and very few citizens ever come because they can't come. And it makes it—it makes a—I think it hurts the credibility of government when citizens are not able to participate.

There was another interesting thing that came to mind and as I was coming up on the plane, it occurred to me the—in looking at the busway situation, I was down in the Auto Club one day in Los Angeles and I picked up a brochure put out by the Automobile Manufacturers Association. I believe it was put out in '67 or '68 with a very hard push for—for busways by the automotive manufacturers. And I think this is a—this is some food for thought.

The other thing that has occurred to me, too, that I think is relevant here in looking at the final environmental statement that was submitted by the California Division of Highways and the Southern California Rapid Transit District, the kinds of responses that the—the Highway Department got from—and the RTD got from the agencies they wrote to were generally—you know, they come back from persons, administrators, who had rather narrow interests in whatever their agency did. But there was—there was only one man in there who wrote a letter, and he was from the Bureau of Outdoor Recreation. And a letter followed several days later from his boss, which sort of slapped him on the wrist because, in talking about this business of what the busway was going to do to open space, he went beyond the normal concerns that apparently a BOR executive should have. And his boss sent a letter a few days later apologizing.

But every other letter in there was a letter that was just concerned. The flood control said we are not concerned because there is no floodplain in here. This was the U. S. Army Engineers. It so happened there was a floodplain out on the Rio Hondo. But I guess the Army engineer who answered the letter just didn't do his homework.

And throughout the final statement there was a series of specialists answering highway builders. Also specialists with the result there was no—nothing in the report. There was no overview of what the—what the total all-encompassing result of this thing was. And this, of course, defeats the intent of Congress. It defeats—I'm sure it defeats the intent of all the dedicated people that are working in the EPA Agency and throughout the government, but who are constantly frustrated and thwarted and —by this type of building cubicles that are insulated from each other. And this is why the individual—I think the individual citizen advocacy is so terribly important to breathe life into the whole wonderful thing that we started with—here with the Environmental Protection Agency. And if we can move onto that, then I think that my trip up here in the early hours of the morning will have been well worth it.

Thank you.

Dr. **MEYER**: Mr. Man, in the first place, let me be sure and thank you for taking your personal time and investing your personal money in responsive citizenship, because it's only by such responsive citizenship that we can make any progress at all.

Before I ask a couple of questions, I will ask Mr. Hildebrand, do you have any questions?

Mr. **HILDEBRAND**: No.

Mr. **BARON**: I just wanted to thank you for shedding light and cautioning us on the impact statement. That is no end at all at the moment. And there are a lot of things to watch for and for hammering on this issue of independent advocacy.

Thank you.

Dr. **MEYER**: Well I want to echo again this problem of environmental impact statements. It's a matter of great concern to the Administrator, Mr. Ruckelshaus, and to others in Washington. The law has only been in effect a year and a half. It almost took about three to five months to begin implementing this law. We are learning a great deal. And the suggestions that you have made are those which have been brought up by others.

One of the big problems that arises is that some people in the state agencies and some of the federal agencies forget that environment includes urban environment. You raised the point there was no impact on wildlife, but that is part of the environment. The real intent of the law is to consider all of the environment. We have all got some educating to do because the urban environment is just as important to the people who live in it as the rural environment is as to perhaps wildlife and the people who are there.

I am going to tell you, sir, that I will make some abstracts in addition to providing a complete copy of the verbatim transcript to what you have said and send it on to the people who are concerned with improving the situation on the environmental impact statement.

One of the real problems are the time elements that you mentioned. I would like to point out to you, the Environmental Protection Agency did not set those time limits. They are set somewhat by both Congress and the Council on Environmental Quality.

I would like to ask a question, too. From your observations, is there adequate publication of the submission of an environmental impact statement draft by the agencies? They are called for to be submitted through the clearing houses and public notice is supposed to be issued. How do you find out this impact statement has been prepared?

Mr. MAN: I found out about it simply because I had—I had been talking to the Railroad before I even knew about the busway, about the possibility of their accepting some—some work that the Barrio Planners had done for the building of an earth berm along the San Bernardino Freeway. And I was out there with the Railroad—the Railroad Company executives who were interested in the idea and were starting to think along the same lines. And they mentioned that this thing was pending, and when I heard about this, of course, I called up and the Highway Department—and they then sent me a copy of the final statement. And I went to the first hearing they had. They sent me a copy of the draft statement and then I went to the first hearing.

We brought up the problem of the—this poor little vest pocket park that was going to be overwhelmed by large buses on the freeway, on the busway, and by locomotives and by the continuing traffic and the—what happened after this was that we met with some men from the Highway Department, some engineers, and they went out on the site and they were standing about four feet away from us and shouting at us and telling us, "You don't have any sound problem. You don't have any noise problem down here."

And, you know, this—I'm sure you people in the noise profession probably see this all the time. You go out on the sites and people are bellowing at each other and they insist that there's nothing wrong. So the—that was—that was the way we got into it. But the incredible thing was that the Highway Department had not sent the Los Angeles Park and Recreation Department a copy of this. A number of—A number of key—A number of key agencies didn't even know that this was happening until we called them up and said, "Do you know that this is happening to this piece of land you have acquired?"

And so we had—we had this—this completely unreal situation where we have—we have a Park Department in Los Angeles getting a—getting its funds from HUD in order to develop a vest pocket park and from the—also getting funds from the Bureau of Outdoor Recreation and then across the line we have the Department of Transportation practically cancelling out the—the work that's being done by the other two federal agencies. And the man who wrote the letter from the Bureau of Outdoor Recreation, which is in the final statement, says he doesn't—he doesn't see that any serious problems are being raised here; that the present wall will take care of it.

We are glad it appears that a wall is going to go up, but he, again, didn't—neither he nor the people who wrote this report ever give any consideration to the—to the horrendous noise level we are going to get from those freight trains. And this is next to a housing project where the children have such terrible problems in schools and the families are large. The noise at the family level is terrible as it is without compounding it with noise coming in from the outside. So it's, you know, it's like the Pandora's box, this thing. You pull things out. It's endless. There's no bound to it.

Dr. **MEYER**: Thank you very much, sir, for giving me that information, because it highlights the important problem of coordination of effort.

It is now 12:30. We have been running a little late because we started a little late. I will recess this hearing until 1:30, at which time we will continue with our schedule of witnesses.

The meeting is recessed.

(Noon recess)

AFTERNOON SESSION

Dr. **Meyer**: I hereby call to order the second sitting of this public hearing on noise. At this point I should like to ask Mrs. Thomas Souza of Walnut Creek, California, if she is here. Mrs. Souza, we would like to hear from you and are pleased that you can come join us.

STATEMENT OF MRS. THOMAS SOUZA, WALNUT CREEK, CALIF.

Mrs. **Thomas Souza**: Mr. Chairman and other members of the panel:

I am here as a private citizen representing myself and my husband and the rest of our family. I am here at my husband's request. As Mr. Man suggested, if these hearings could have been held at another time, my husband could be here himself. He planned to take the day off, but he was needed, and so he asked me to come in his place.

The topic that we have chosen to talk about is residential noise or, more specifically and in at least our case, noisy neighbors.

I thought when I came today I might hear some other speeches first and get some good ideas. But we do have aviation problems in Walnut Creek, so that was very interesting. But I am on my own on this subject.

There were a couple of points made earlier that I would like to comment on, if I could. First of all, the assumption that people should learn to live with noise if it's economically to their advantage I find very objectionable, probably because what is economical in the short run may be not economical in the long run when the sociological factors become more prevalent.

Secondly, there's been mention of inside and outside noise levels, referring to inside a building and outside. Insulating a house may help lessen the effects of noise, but what is really being said, I think, in this particular case, is that we should insulate the human person when and wherever possible rather than be attacking the problem at its cause. And that just goes back to saying that we should learn to live with a certain amount of noise just because it exists. And I think that at this point in time the human person has been insulated as far as he can possibly be padded and that we cannot absorb anymore noise. In general, people are becoming more aware of the noise around them, and they are becoming more frustrated and they are starting to make their frustrations known.

The point that I would like to make here today is a statement, or whatever you would like to call it, and that is as a private citizen I don't think that we should have to put up with or just learn to live with noises that are unnecessary, either because technology could eliminate them or personal considerations for our fellow neighbor could eliminate them in a personal way. There are enough noises that really can't be eliminated. I am aware that there are certain situations that you just do have to adjust to. But there are a lot of things that could be eliminated and it's time we started eliminating them.

Just to give a couple of examples which we are all familiar with that are very prevalent in our particular neighborhood, and I am sure they are everywhere else. But mentioning them sometimes makes them more obvious again.

Being awakened at 8:00 o'clock on Saturday morning by your neighbor's loud gasoline lawn mower could be eliminated very easily by technology. But it won't be eliminated until it's to somebody's economical advantage to do something about it, I'm sure. Also trying to eat your dinner while the neighbor's dogs bark incessantly could be eliminated with the personal consideration for your fellow neighbors taking the dogs in the house or making them come out—the neighbor coming out and have the dogs quit. But nobody's going to stop the neighbor's dog from barking until there's some rules and regulations that says you must stop your dogs from barking.

And the other experience that we personally find very frustrating is the problem of outdoor music or ballgames or programs of any sort outside, because in Walnut Creek, as in other areas of California, we do a lot of outdoor living. Here it's bad enough when it's so noisy outside to have to—that you have to go inside to get out of the noise. But the real problem is why should you be forced to go into your house to get away from the noise? The noise from other—other yards is an invasion of my privacy, I feel, because it's not something I can turn my back on and have it go away like if something I am looking at on TV is objectionable, I can close my eyes. But there's something about sound that is all-pervading, and you just cannot turn it off except by asking your neighbors to turn it off and if they don't feel like turning it off, you are left with it.

I think the biggest problem is that noise on almost any level in a neighborhood situation at this time is perfectly legal. There's no—no—no law known to me—and we have gone into this a little bit—that makes any particular noise illegal. If you have an objection, you can call the police who really—this shouldn't be their job to come out and make somebody turn their radio down. We could make a—a formal complaint and that makes your neighbors angry at you and you don't want to be that kind of a neighbor because you have to live with each other as it is. The problem remains that there's no specific control regulating just how much a person has to put up with, and it is my intention here today to request that the area of the neighborhood noise not be side-tracked in favor of the more pressing and also real problems of aviation noise. It is my opinion that this is an area of real citizen concern, also, and even though it's a difficult problem to solve, as are the others, I don't think we should ignore it and leave it for last and take care of the more technologically controllable problems first and leave this one for itself.

Thank you very much.

Dr. Meyer: Thank you, ma'am. Would you wait in case there's a question from one of the panelists?

Mr. Hildebrand?

Mr. Hildebrand: Just sort of a comment. I think one of the prerequisites any noise campaign has to an individual is his awareness of what sounds he personally makes. And I would say that your neighbor's dogs may be very noisy, but your children may also be noisy. And, in my case, my children are noisier than my dogs. And, therefore—and another point I would make is that certainly not all noise should be subject to legal regulations.

For example, children playing or dogs barking. If they bark day and night or if they play day and night or if they are excessively loud, then perhaps you will have to resort to phoning the police or going over yourself. But otherwise I don't see any solution. I mean we could set up a model code with decibel limits for urban environments, but that doesn't solve the problem. That doesn't stop the person. It doesn't make the person bring his dogs in in the evening or it doesn't stop him playing his radio excessively loudly.

Mrs. Souza: How do you solve the problem, though? Do you just let them to continue to play it loudly and let the dogs bark because we don't have a solution?

Mr. Hildebrand: I am asking you now. Do you have some other solutions? I am saying that laws are not always the answer. And I am saying, "Yes, you do have to ask them to stop." And if they don't stop, then maybe you have to ask your police to go and ask them. If that doesn't work, then you can take legal remedies, such as trying to get an injunction to make them behave in a certain manner. But not all noises are subject to legal controls. For example, children playing.

Mrs. Souza: Right. I wasn't referring to it. It seems to me a mechanical device could be subject to legal control, and I would consider a radio a mechanical device. I mean if you are constantly beraged with loud music, all you legally can do is ask the person to turn it off, and if they don't, you can take them to jail. But that shouldn't be necessary. There should be some legal curtailment of outdoor noise. Just because it happens to have a person attached to the other end of it doesn't make it different from an airplane going overhead.

Mr. Hildebrand: Right.

Dr. Meyer: The point I am trying to stress is that you made a very good point in that the personal consideration is important. I am saying you, too, have to have personal consideration.

For example, I'm sure you have one or two automobiles. And I'm sure that not one of them has an air pollution muffler on it. And it's been shown that the air pollution mufflers also make the car quieter. And I am sure that you haven't installed insulation around the motor compartment of your car and this is a personal effort that you could individually make.

Mrs. SOUZA: Just coming back for a moment, I personally would be willing to do whatever anybody would suggest, because we had ducks. They bothered the neighbors, and we got rid of the ducks. We understood they bothered the neighbors because of the noise problem. Agreeable. But it should work both ways.

Mr. HILDEBRAND: You may have to get rid of the neighbors, then.

Dr. MEYER: Mr. Baron?

Mr. BARON: There's a tendency to distinguish between the noises of technology and the noises—or people noises that invade privacy. And I, in a way, don't quite agree with my colleague to the right here. I think that we must devolve a way so that there are reasonable standards set up to protect privacy. And I understand that in Germany that, if a policeman goes by and hears a radio playing in an apartment loud enough to be heard on the sidewalk, that he will go in and ask that person to turn the radio down. And I think that what is necessary, however, is a climate for this kind of amenity. It is very difficult to give it a cold-sell, so to speak, and this is part of what I think the citizen has to do is create that kind of climate so that you don't tolerate this kind of invasion; that you actually label it as an invasion of privacy to begin with, and then work out ways of controlling it. But there's a general tendency to use—and you touched on it—to differentiate between people noises and the noises of technology. And I—We have to go after both of them.

Dr. MEYER: Mr. Martin?

Mr. MARTIN: No.

Dr. MEYER: Dr. Dietrich?

Dr. DIETRICH: I have a question, Mrs. Souza, having to do with something that's in a written statement that I have here over your name in which you discussed the noises of household appliances. And I did want to ask a question of someone who had to live with them every day.

You were talking about things like dishwashers, garbage disposals, and so forth. And I would like to elicit your opinion and your feelings about the choice that at the present time I guess it could be said to be considered by regulatory agencies.

With respect to household appliances, would you like to see them sold with labeling that gives you some notice in advance of how much noise they make so that you could compare brand to brand, let us say, or do you think that it's more effective, or what you would like to have would be absolute regulations which, say, that no one could sell a product of this sort which made more than so much noise? Would you rather be an informed consumer and choose in the marketplace among quiet to noisy appliances, or would you like a government agency to choose the limits for you?

Mrs. SOUZA: That's a very difficult question to answer, but—

Dr. DIETRICH: I thought maybe you had an opinion.

Mr. Souza: I do. Every housewife has an opinion. At this point in time when noise is just starting to get some publicity, I would go the liberal over-board side and say regulate it. You can always take the regulations away. Granted it's bureaucracy and it doesn't always work. But I would much rather have it go that way at this point than have it take 20 years to advise people and educate the public that we cannot continue to put up with these noisy machines.

Dr. **Dietrich**: Thank you.

Dr. **Meyer**: Mrs. Souza, thank you very much for helping. Your presentation provoked some questions from the panel, bringing to the fore the fact that this is—as I said at the outset—an extremely complicated problem.

Thank you very much.

Mrs. **Souza**: Thank you.

Dr. **Meyer**: Is Mr. Ronald Pelosi, a Supervisor of San Francisco, present?

All right. Then I should like to ask that Mr. Donald Miller, a representative of the Los Altos Noise Abatement Committee, if he would kindly step forward and let us hear from him.

Proceed, sir.

STATEMENT OF MR. D. A. MILLER, LOS ALTOS NOISE ABATEMENT COMMITTEE

Mr. D. A. **Miller**: Any individual who becomes engaged in "fighting for a cause" can usually lay claim to two qualifications:

MOTIVATION, for various reasons, and

EXPERTISE, through exposure and experience.

A freeway, Interstate 280, rammed through our bucolic residential area in 1966 provided the motivation for my becoming involved in fighting highway noise. Over four years of experience in combating the problem have provided considerable expertise. I am now recognized at national (perhaps international), state, regional, county, and local levels as an expert on highway noise abatement. Perhaps the only meaningful recognition is by the tax assessors office which has granted that I hold such status in Santa Clara County!

Although I am well informed in areas of noise pollution other than highway noise, I know that other witnesses will adequately cover the problems of aircraft noise, community actions to combat noise, and will provide statistical data to substantiate noise control actions; we have agreed upon our respective areas of focus in order to minimize duplication of data and testimony. I propose, therefore, to direct my remarks to highway noise abatement primarily, without detracting from the equal priority for combating noise from other sources. I will condense the sense of four years of work in this area, most of those spent as Chairman of the Los Altos Hills Noise Abatement Committee, by the following approach:

- Provision of two "Annual Reports" which contain summarized information from community actions.
- Tabular listing of contacts involved in the fight against highway noise pollution.

- Recommendations for action by the Environmental Protection Agency and other government bodies.

While limiting my discussion here today to the relatively narrow field of highway noise abatement, in order to permit others to testify in their fields of competence, I would like to enumerate the achievements we have made in that area alone. These include such actions as:

- Motivation to neighboring communities to expand noise abatement committees from one (Los Altos Hills) to seven (in contiguous communities).
- Revision of State Vehicle Code (through locally instigated action) to reduce by 2 dB (4 dB proposed) in 1973 (earlier proposed) the allowed noise emissions from vehicles on public highways.
- Experimental noise reduction barrier by the Division of Highways on I.S. 280 to test theories advanced by our community.
- Experimental barrier/baffle on I.S. 280 to reduce noise in surrounding area.
- Education, through television, radio, school appearances, and ecology "fairs" of the populace to the threat of highway noise.
- Definitive evaluation of the depressing effect on values of property adjacent to our local freeway.
- Enactment of a precise, yet comprehensive (all noise sources), noise abatement ordinance to control noise in the community.
- Conduct of a citizen's reaction survey re noise reduction measures implemented locally.

Partial achievement has been obtained in other areas such as vehicle type regulation, highway landscaping, pavement modification, restriction of noise producing developments, and implementation of construction design to reduce noise. Summaries of these actions can be found in the attached reports.

Of primary concern to an agency such as the EPA are the number and identification of action agencies/organizations involved in the implementation of the foregoing achievements. The table below lists a representative sampling of those actually involved in the highway noise abatement activities of one community. Aircraft, appliances, rapid transit, off-highway vehicles will generate an equally long tabulation. The basic conclusion to be derived is that a great many organizations are involved in abatement of noise of any type. To get these agencies/organizations to accept their rightful responsibility is an extremely difficult task. "Passing the buck" is the favorite/sole exercise of most of these agencies when the subject is noise abatement. A real role that the EPA could perform is to set standards at the national level to which state and local governments could tailor their programs for highway noise abatement. Recent discussions in Washington have convinced me that the EPA must shoulder the primary responsibility for noise abatement actions by the Federal Government. We must continue to press at each level of government to obtain responsive action, be it enactment of laws, enforcement, or equalization of taxation.

As noted in the attached report of committee activities, the primary objective of any corrective body in noise abatement should be that of influencing the responsible agencies to discharge their rightful functions. All of these agencies, from a town council to the administrative offices of the President, are confronted with these similar obstacles to implementation of effective noise abatement actions:

- Difficulty of communication between highway "professionals" and irritated citizens.
- Inherent avoidance of responsibility for noise control (vehicle versus highway design).
- Divided or obscure authority for implementation of corrective measures (federal vs state)
- Vested interests in existing scheme (autos, trucks, motorcycles, road construction, petroleum products, etc.)
- Lack of adequate funding to implement any effective measure beyond the current debating stage.
- Apathy of the citizen, taxpayer, and lawmaker who has been thoroughly overwhelmed by the power of the existing structure.

In the three days of this hearing on noise problems you will be deluged with complaints, statistics, biased arguments, conflicting data and an over-supply of emotion. I am convinced that the intricate process whereby man brings upon himself a pollution which he comes to abhor can be equalled by a process that enables him to survive. I suggest that the EPA holds the key to that survival. Although restricting my suggestions today to highway noise, another forum would enable a broader spectrum of recommendations to be considered. For the present, the EPA could be very effective in highway noise control/abatement if it would act to:

- Obtain Federal Standards for transportation/highway noise.
- Recommend/force withholding of Federal funds from highways not meeting adequate design standards for noise abatement.
- Institute procedures for allocating a reasonable percentage of highway construction funds to noise abatement, including corrective measures for existing highways.
- Act to promulgate information on noise control legislation, ordinances, enforcement, and legal redress.
- Encourage university and private foundations to conduct pilot programs in legal, public reaction, financial aspects of highway noise abatement.

In conclusion I wish to stress one important factor that is recognized by us all. Preservation of the ecology will take money. Until meaningful funding is diverted to noise abatement, the whole subject will just remain "so much noise."

SUMMARY OF INTERFACE CONTACTS
LOS ALTOS HILLS NOISE ABATEMENT COMMITTEE
(HIGHWAY NOISE)

ACTIVITY	*COORDINATING AGENCY/ACTIVITY*
Baffles and Barriers	Cal. Div. of Highways
Community Participation in Noise Abatement	Province of Ontario
Corrective Measures for Noise	Cal. Div. of Public Works
Ecology Actions	Schools and Community Groups
Enact Local Ordinances	Similar Ordinances (Inglewood, Fremont, Honolulu, Boulder, Memphis, So. San Francisco, Los Angeles)
Enforcement	
Establish National Standards	Cal. Highway Patrol
Experimental Definition of Reduction of Vehicular Noise	U. S. Dept. of Transportation D.O.T. Office of Noise Abatement
Highway Design	
	National Cooperative Highway Research Board
Legal Aspects of Truck Ban	Federal Div. of Public Roads
Materials for Noise Abatement	Thiokol Chemical Co.
Mathematical Prediction of Noise Problem/Abatement	Environmental Systems Laboratory
	Cal. Highway Patrol
Measurements of Highway Noise	Cal. Dept. of Public Health
Noise Standards	Tax Assessor, Santa Clara County; Assn. of Real Estate Brokers
Property Values	
	Catholic Archdiocese of San Francisco
Proposed Expansion of Urban Development	California Planning and Conservation League; Acoustical Society of America
Proposed Legislation on Noise Control	Commercial Television and Radio Stations
	University of Santa Clara
Public Information and Education re Highway Noise	Stanford Research Institute
Public Reaction Survey	League of California Cities
Research re Noise Effects on Human Beings	
Resolutions to Abate/Reduce Vehicle Noise	Peninsula Committees; Committee for Green Foothills
Scenic Highway	Foothill College—Santa Clara City
Sports Car Rallies	Cal. State Legislature, Senate
State Vehicle Code for Noise Levels	
Truck Ban on Freeway	Cal. Div. of Public Works; Peninsula Cities

Dr. MEYER: Thank you very much, sir.

Dr. DIETRICH: I hope it doesn't remain so much noise.

You spoke about federal standards for highway noise. And just to clear this up in my mind, you are speaking about something that is different from a federal standard for the noise emitted by a particular class of motor vehicles, are you?

Mr. MILLER: No. I think that we would like to see at the national level examples of a—what vehicles should be allowed to make on highways very similar to the California Vehicle Code. Now these should be guidelines.

Dr. DIETRICH: You were talking about limits, regulatory limits?

Mr. MILLER: I am saying as a standard to which other agencies, such as state, could tailor their regulatory legal processes.

Dr. DIETRICH: I see.

Mr. MILLER: I think the setting of standards along the national level, the enactment of the laws at the state level, and the enforcement at the local level, all have to go hand in hand. I don't want the federal government to feel they can take over the entire field of enforcement of existing standards.

Dr. MEYER: Amen!

Mr. MILLER: I don't want to be usurped of a police power, if you will, of the state and the local governments. But I do think we need something to look to and it's very frustrating to go to Washington and say you have been to Europe. You have talked to the people there. Now what are realistic standards, because we are pressing for legislation to get realistic standards established in our state. And they say, "Well, we look to California."

Do you know who is responsible for those in California? They say, "You are." And—And around we go.

Dr. DIETRICH: Thank you.

Dr. MEYER: Mr. Hildebrand?

Mr. HILDEBRAND: You said you are afraid of the federal regulations being too liberal, correct?

Mr. MILLER: Yes.

Mr. HILDEBRAND: Do you see that there may be a reason that they may have to be liberal because in California you may have more cars than Oklahoma or Nebraska or some place like that and the—we need a—perhaps a liberal minimum standard and then the state, if it wants to be more strict, could be more strict? Do you follow the argument?

Mr. MILLER: Yes. But I think the federal standards should be set as guides. And I feel they could be even more strict than those in California today. And I think there are studies on record that indicate that—In fact, they—I know they are on record, that indicate that it is entirely feasible to get standards of highway noise below those in California today. The approach was used in implementing the corrective measures in California. They put it at least four dB(A) above the recommended levels originally.

Mr. HILDEBRAND: And would you also like to see standards relating to the construction of highways? In other words, putting highways in troughs or building baffles?

Mr. MILER: Indeed, that's the meaning of one portion of my statement that I feel that a portion of highway funds should be diverted to corrective measures and new highways should not be built unless they meet the minimum standards for noise abatement. And I think you will probably hear today from another witness who will address a unique approach to us to guarantee that that can be done. We feel it can be done.

Mr. **Hildebrand**: Thank you.

Mr. **Baron**: When you use the expression "realistic," which I find a fascinating determinant coming from a member of the public, have you in your work come to some kind of a definition of what "realistic" means?

Mr. **Miller**: Realistic, in my use of the word, is one that attempts improvement yet does not top of joust with windmills. And I can give you a situation of one member of our Noise Abatement Committee who, in fact, was responsible for many of the measurements that were taken before we set these particular standards.

He took up raising chickens and ran across the fact that his rooster probably exceeded the ordinance noise levels. He took the realistic approach. He got rid of his rooster. That's realistic, if you will. He couldn't stand the noise. And he would—he could have had someone by and enforce an ordinance. But he took what I feel is the realistic approach. You either can live with it or you will try avoidance.

Mr. **Baron**: How would you answer this question? They say that a living room should be 45 dB(A), or something like that, let's say.

Mr. **Miller**: Yes.

Mr. **Baron**: We don't know. We really don't know what the ideal decibel level is. I don't think we do. We talk about highway noise.

Now you talk about two decibels down from 88 or 86 or whatever, which means that residences are certainly going to get more than 45 dB(A).

Mr. **Miller**: Yes.

Mr. **Baron**: Do you have any line of thinking that would bridge the gap between the desired noise level in the home and the noise level which is usually not geared towards what the level should be in the home but what is technologically feasible or in some circumstances also called realistic?

Mr. **Miller**: I can't give you an answer in the numbers of dB's because it's such a difficult thing to measure. I know that I have three bedrooms which cannot be inhabited with the window open and get any sleep. The noise level there probably is less than 45, I'm sure. But it's a very quiet surrounding and the burst effect from the freeways and the rest makes it very disturbing.

We have three patios we no longer use because of the highway noise, and I am sure it's going most of the evenings down below the 65 dB level by the time the afternoon traffic is over. But, as pointed out by other witnesses, we are being driven inside. We no longer barbecue outside. I have installed an inside one. I have changed the fans in the kitchen because of this. This is a realistic approach in my terms in that I am attempting to live with the situation until such time as the highway will take the corrective measures to install the baffles and the barriers which can be done.

Mr. Baron: In the air pollution field, they say, for example, by 1975 they will try to reduce emissions by X percent and so on. What I mean—The question I am raising is whether or not you would support or want to see this kind of a thing where we say to motor vehicle technology, of course, you have included design on —you have a two-part attack to the problem.

You say to technology that you must think in a significant reduction in the emissions—

Mr. Miller: Yes.

Mr. Baron:—so that you can barbecue outside.

Dr. Meyer: You had your hand up?

Mr. Martin: Throughout the testimony today, and even in yours, you have indicated a desire that the local communities should not be pre-empted. Now let's take the case of an interstate highway which goes from one end of the country to another, through a multitude of various communities, states and different things. If you would allow each local community along that highway to set its own requirements, you could probably end up with a situation where a vehicle couldn't go from one community to the next without violating the law. Don't you think it would be a lot better if the federal government actually pre-empted and set regulations, especially on anything in interstate commerce or an inter-state highway, covering the whole thing and not allow a local community to affect the entire operation of the national commerce?

Mr. Miller: Back to my word "realism." We understand that, and we appreciate it. We also feel that the actions on the part of the state and the federal government have not been very responsive in noise abatement. We have an ordinance which we recognize cannot control the vehicles on the interstate freeway, despite my deep-down love to have a noise trap out on the freeway as in the old days of the speed trap in many of the Southern states. That would be an attention-getter that would really get a reaction, I'm sure.

But what you are saying is that there has to be a recognition of the statewide or inter-state commerce and we recognize that. And we feel, however, that the actions at the state level and the federal level have not been adequate. We would like to see the local levels and the local controls imposed on many other fields.

On the inter-state highway we would like to see improvements from the current levels.

Dr. Meyer: This dialogue, and that with Mr. Baron, has brought up a point. As part of our study, preparing this report to Congress, we have asked one of the leading universities to make an analysis of all existing schemes for legal abatement of noise; this volume of our report to Congress is literally this thick (indicating). It's some three and a half inches thick. It comprises some 700 pages of information which highlights the problem that Mr. Baron's pointing out. There are all of these regulatory schemes in existence which make it almost impossible to implement any of them except in a fragmented way.

I mentioned this while we are paying a lot of attention to this question of whether there should be federal standards while retaining some degree of latitude for the municipalities and the states to exercise their powers. I think one has to keep in mind this fact of life that here's this book of some 700 pages dealing with this whole problem.

Mr. Hildebrand made a beautiful review of this subject, and now we have gone even further, and it does cause a problem.

Mr. **MILLER**: Yes, sir.

Dr. **MEYER**: Any other questions or comments?

Thank you very much, sir. I feel that your suggestions as to what the nature of the problem is and your recommendations are those which we will have to give a lot more attention to.

Thank you, sir.

Mr. **MILLER**: Thank you, sir.

Dr. **MEYER**: We have just heard about problems of highways. I would now like to ask the Councilwoman from the City of Los Angeles, Pat Russell, if she would come forward and talk a little bit about some of the problems in Los Angeles.

STATEMENT OF PAT RUSSELL. CITY COUNCIL. LOS ANGELES

Mrs. **PAT RUSSELL**: Thank you. Good to see you again.

I am Los Angeles City Councilman Pat Russell. The problems of noise pollution have special importance to me for two primary reasons:

1. The Los Angeles International Airport is located in my Sixth Councilmanic District;
2. I am Chairman of the Council's Building and Safety Committee.

My remarks will be limited to the issue of the airport noise problem, because I am sure that others will be addressing themselves to the model legislation recommended in the state legislature for local and state Building and Safety requirements.

There is a need for assigning responsibility for airport noise problems. Up to the present, the lawsuits that have been ruled on have negated responsibility by the airplane operators, by the airports, by the local cities, and yet there has been no assignment of responsibility. The basis for ruling out airport and local authorities has been primarily the issue of interstate commerce. This is a valid issue, for the very nature of national and international air travel prescribes that the federal level should bear the responsibility for noise control at airports.

My second point is that I support the pending legislation which would require retrofitting the current generation of airplanes. The Federal Government has already taken the first step in certification of the new generation of quieter planes. The retrofit legislation would be a second step and I strongly support Senator Cranston's bill, SB 1566.

Thirdly, I have a concern that, while the country has awakened to the problem of airplane and airport noise, new legislation tends to point only towards new airports, which, indeed, is an important sector. I would like to emphasize, however, the importance of taking action on existing airports where there are massive numbers of homes bombarded with excessive airport noise. So, the third point I want to make is that legislation can be established, probably fairly easily, to take care of future airports, but there is a major and more difficult job to do on existing airports.

This leads very naturally into the next point, namely, the issue of defining blight. A major way of helping existing airport communities to make a transition and create a more compatible airport community is to establish a definition of blight which could include that caused by airport noise. If this were accomplished, the airport communities would be able to get federal redevelopment funds, which could play the most important role in creating the desired compatible airport community.

Dr. **Meyer**: Thank you very much.

Panel?

Mr. **Baron**: Excuse my ignorance. This term "blight" has a legal significance in other areas.

Mrs. **Russell**: Right. For redevelopment, which means that you can get funds that you can incorporate and have, say, the right of eminent domain and so forth. In order to be able to do this, it has to be blighted, like this is under community redevelopment. You have to redefine blight and a certain amount of the area has to be physically run-down.

As I say in the—in my district, we have really beautiful homes which are blighted in every way except physically. People will not be able to sell their homes for five years, for instance, and they can't walk away from the investment, which is a major investment for most people, their homes. And they finally begin to rent and renting under the disadvantages of a noise impacted neighborhood means that you begin to have a worse and worse situation, a lower and lower level of maintenance.

Mr. **Baron**: What you are really saying, then, is a—that an area which is hit hard by noise is a degraded area and I think that in HUD this sort of thing is coming out where they will not grant funds for renewal if there are noise levels above a certain designated level. And I think you might check into that.

Mrs. **Russell**: I have talked with HUD. One reason I am saying that is that I have talked with state, federal and local officials, and we really hit a barrier on trying to get, for instance, as I say, any self-help organization, and where you have to use a definition of blight, you are really saying the inverse of what I am saying. I think, Mr. Baron, because the—I think it's right that they not let—they not let funds go to an area that is noise impacted.

On the other hand, I am saying that if the change in an area that is now R1 can no longer exist in R1, to let it change. There needs to be some way of getting funds or some mechanism of community activity. And so they need to be defined as blighted in order to be able to take another step.

Mr. **Baron**: Just one last question.

You used the word "desired compatible airport community." I just wondered if you have a definition of "compatible" that you use?

Mrs. **Russell**: I don't have a quantitative definition. I use that as a councilman because I feel that our airport is one that we are not going to get rid of. It's not desirable from the viewpoint of the community. Neither are we going to get rid of the community. And they have to be compatible.

I think historically the community has had to be compatible to the airport, and I think it's like being a little more equal than the others. I think the airport has to be compatible to the community and so, for instance, in my remarks they are both ways. There are two prongs, and you can't do one without the other. You have to go for noise abatement at the source and with the operations of the airport and, at the same time, I think you have to work on land use conversions so that, through noise abatement, the airport becomes compatible and, through land use conversion, the community is compatible.

Mr. BARON: Would this have avoided the Playa—

Mrs. RUSSELL: del Rey?

Mr. BARON:—incident of a couple of years ago when property was revalued and the property owner could not realize the worth of his property?

Mrs. RUSSELL: Right. I think it would set limits. What I am trying to do is set limits that we can work within, and I think that once we get this established, for instance, in our community around Los Angeles International, we won't be having the new problem.

Mr. BARON: Would this make it easier for the person to move out?

Mrs. RUSSELL: Defining the blight?

Mr. BARON: Yes.

Mrs. RUSSELL: Yes. You see, the only way now a person can move out is to be bought out by the airport. And this is rather hard on the airport and the airlines to keep putting money into buying more land. Also it's hard on the City and the community to see the land taken by the airport. But it's the only way out right now.

On the other hand, we have citizens who really are very innovative and who are willing to—to change the land use of where their single-family residences are and they would like to make it R3, or commercial, and soundproof them. They would like to participate in this. They do not want to be forced to move out at low prices and then see somebody else move in in a massive development and put in R3 or something and then make a lot of money out of this. They would like to be able to do it themselves, and there's no mechanism for that.

Mr. BARON: Rezoned under control for the benefit of the property owner, the residential property owner; is that what you are saying?

Mrs. RUSSELL: Right. Well the individual property owners and the community as a whole.

Dr. MEYER: I guess what you are saying here is that instead of having an urban renewal approach in which some urban renewal authority comes along and redevelops the whole area, condemning the property and paying for it, that there ought to be some mechanism whereby the compatible approach can be undertaken in a fair and equitable manner so that, if there are changes that need to be made in the character of the locale, they could be made without the individual undergoing a tremendous loss.

Mrs. RUSSELL: Exactly.

Dr. MEYER: This is something we are really going to have to look at a great deal, I am sure, in working with the federal government, with state and local authorities, because it does make some degree of sense to try to keep the values and avoid the situation that is different in different places. People feel that by no means should the character of their neighborhood be changed; they feel that the airport should change. And there is a great deal of validity in some of their views under certain circumstances.

But you have given us a lot of food for thought with this idea of some sort of a different approach. It's not urban renewal and it isn't condemnation, either. But it's a modification.

Panel, any other comments?

Mr. MARTIN: I agree with what you have said. But there is one point that I always get a feeling that local communities keep looking to the federal government to be the way out. Every airport is a local entity and has the right to pretty much control the land around it with the local community's help. There is little doubt Los Angeles and the Los Angeles Airport could pretty well do what they want if they so desired, to correct the situation and spend the money. There is a tremendous investment there, no question about it. Why are you always looking to the federal government as the only source of the funds to do this? Why not make a major effort on the local part, including, for the sake of argument, control of the number of flights out of Los Angeles Airport? The airport has that authority, not the federal government. The FAA doesn't control the use of the airport. They only control the safety regulations, the operating regulations.

Mrs. RUSSELL: Your comments are very welcome to me. I would like to say something that you wouldn't be in a position to know and that is in Los Angeles City, the airport is independent of the city. It is an independent part and so that the City Council of Los Angeles has no control, for instance, over the airport. We could only ask them, "Please be a little bit quieter out there, you guys." Or, "Please don't take your planes off at night," or "don't take off so many" or "don't use the runway that's within 700 feet of houses."

This is the only authority we have. Conversely, the—the Airport does not have land use authority.

As to your comments about looking to the federal government for funds, I tried to make my comments here general for the sake of your—of your committee. Specifically in my district, my constituents are extremely opposed to getting federal funds for urban renewal, for instance, or for redevelopment. It really is a case of "I would rather do it myself, ma."

And what I am saying—what I am trying to do is to knock down the barriers to doing it ourselves. We have a remarkable organization, for instance, that's been in the community working for about three years. But they are signing up almost every house within a group of about 800 houses to take part, and I think rate themselves to—to redevelopment of an area that is within just a few hundred feet of runways and is intolerable. Schools are being closed down, and so forth. And these people could make the transition and change the houses and so forth, except to change these single-family residences into multiple use and into a commercial use which is needed in the area, but there are barriers, legal barriers, to it and, namely, for instance, there's no way that they can have—they can condemn property, say, for—and this is the final, the biggest single problem. The individual who figures his house as a holdout will be worth half a million or something. And when you have a community of people—and we have a lot of aerospace engineers in the district who—who have been able to look at the whole problem and say "We are willing to change. We can do it."

But we do need some—some internal authority, for instance, for eminent domain. Then it's the division of—It's not the funds. It's not the funds that they need there. It's the ability to form an organization and have the eminent domain.

Dr. **MEYER**: Councilwoman Russell, you have again highlighted one of the problems, and that's the multiplicity of authority which is involved in this very complex issue. And I appreciate your statement very much. I hope you will stay for a little longer.

And now we have a gentleman who is concerned with operations of airports who may have some slightly different views. Mr. James K. Carr, Director of Airports for the City of San Francisco. We are very happy to hear from you.

While you are getting settled, I have a couple of announcements I would like to make.

(Announcements off the record, not reported)

STATEMENT OF JAMES CARR, DIRECTOR OF AIRPORTS OF SAN FRANCISCO CITY AND COUNTY

Mr. **JAMES K. CARR**: Mr. Chairman, members of the panel:

My name is James K. Carr. I am the Director of Airports for the Airports Commission of the City and County of San Francisco, which was established approximately one year ago. Prior to that, for some six years, I served as General Manager of Public Utilities for the City and County of San Francisco, which had responsibility for the Airport and also for water and power and municipal transit.

I have listened previously to some of the speakers and, quite naturally, everyone has some ideas about what should be done. But, in the first part of my remarks here, I think that I can contribute something very positive as to what San Francisco has done. And, as far as I know, San Francisco International Airport is the only airport in the United States that has at the present time no lawsuits over aircraft noise. And the last two remaining lawsuits involving prayers totalling some $440,000 have been settled in the Superior Court. And I have brought for the record, Mr. Chairman, a copy of—which I will leave with the reporter—of a letter between the attorney for the two groups that were suing the Airport recently and the City Attorney's Office. And it describes the five things that the Airports Commission of the City and County of San Francisco agreed to do. And on the basis of this, the suits have been dismissed.

And those five things were:

Number one was the lengthening of Runway 28Right. This is a runway that's approximately 9,700 feet long and that we have fill already made, and it should be in the next year or so completed to nearly 12,000 feet long. This is the main east/west direction of our runways that goes through the gap, they call it, for the Pacific Ocean in the direction of the prevailing winds. Runway 28Right when it's 12,000 feet long will have some very beneficial effects in reducing aircraft noise in critical areas over South San Francisco and San Bruno. It will permit—And they are working on this with the cooperation of the airline pilots to permit a right turn very much earlier and short of what we call San Bruno Mountain so that some of these planes will not have to go through the gap, which is a residential area.

In addition to that, it will permit the aircraft to be much higher when they go over the city of South San Francisco and San Bruno.

Now that's one item on which the Airports Commission has agreed with the local people to lengthen that runway to go ahead with the expenditures necessary to do that.

Another thing that the Commission has agreed to is the shifting of flights, wherever possible, to what we call Runway 1 series that's at right angles to the 28 series. And we are endeavoring to get agreement with the FAA and the pilots and others involved to have an allowable cross-wind of 20 knots instead of 15 knots. And that would give us an opportunity to use that runway more often. And this is a runway that goes out over the Bay in the direction of Oakland and the more flights that we can take off on Runways 1R and 1L, the fewer flights we will have to have over residential areas.

The City's also agreed in this connection that it will also comply as best it can with state law to establish a noise-monitoring system. Now the noise-monitoring system is a very desirable thing because it will, for the first time, really give us the facts, at least in terms of readings.

Now I realize that a lot of these things are subjective and they depend a lot on the weather and the time of day and night. I am in a position that you don't recognize, Mr. Chairman, when you called me and that is I—I not only work at the Airport, but I live near the Airport. And I can tell you which flights take off that are disturbing from my own experience.

Dr. MEYER: Sure.

Mr. CARR: But, at any rate, the monitoring system is something that we are urging in connection with a much broader program. We are holding discussions with the FAA officials on this now. We believe that we can computerize the operation and tie it into the tower so that on the computer we will be able to tell you on a read-out at any time what the frequency is of the use of the various runways, what airlines are involved, what type of aircraft are taking off, at what time did they take off, what was the noise for those particular aircraft, and this has even additional benefits because we charge the airlines for the various aircraft they use and landing weights are based on this.

We probably will be able to computerize our billing of land fees on the airlines, along with some of the other advantages of this system. We are working on that now but, of course, it's a problem of funds. It's been estimated that, to put in the noise-monitoring system, even a basic system, we will say, some 15 points, will probably cost about a quarter of a million dollars. But, at any rate, we are proceeding, trying to work out a program. And we are working very closely with Los Angeles and some of the other larger airports.

Now the fourth thing that the City agreed to what—that they would continue to meet with representatives of the FAA on the utilization of air space, taking advantage of their unique position of San Francisco where we can bring aircraft in over water and take off over the Bay. And we are striving to have the routing of flights as far east as possible over the Bay so as to get away from residential areas. And we have had the utmost cooperation from the FAA in analyzing these possibilities. So we will take advantage of the water entry and exit from the Airport to the greatest possible extent.

We also are urging that the meetings of the Sound Abatement Center be properly publicized and that the general public be made aware of the Center's activities so that people will have some place where they can regularly register their complaints. And then we can see what action, if any, can be taken on those complaints.

The Nosie Abatement Center, which is comprised of about 13 people now, representing various interests—airlines, city and all the others—has these items that they are working on, which I think are of interest to the panel.

First, we have been removing all training flights to outlying fields, wherever possible, to reduce those flights and establishing these preferential runways to be used so that they are based on the amount—on the least amount of noise. I forget. I don't have the exact figure here now, but it seems to me that it was only a few years ago that something like 65 percent of all the flights were going through the gap, South San Francisco, and the last time I looked, we had something close to 90 percent of our flights which were taking off most of the time over water.

You realize that there are times when the weather is from the south that we do have to take off over the Burlingame residential district.

We have also established there should be no engine run-ups between 10:00 p.m. and 6:00 a.m. in the hangar areas. And then when we have any prolonged engine run-ups, we have agreements with the airlines that they will take the aircraft out to the Bay and at the edge of the area and preferably when the wind is such that the noise will not be carried to the residential areas.

And, as I say, we have been working on these various routes and altitude procedural problems with the idea that insofar as possible we keep them high. And this, in turn, reduces the noise. This can be overdone.

I saw one pilot yesterday keeping it high coming in from the south, finally decided he was a little too high and had to go do a 360 because he kept it high away north of the San Mateo Bridge. So it isn't—It's something you got to sooner or later get down.

We also have in the Noise Abatement Center the promotion of sound-conditioning of homes. We have been working with the developers and urging both new and old homes, wherever possible, be conditioned for sound. And this has been done according to the Noise Abatement Center with over 5,000 different homes.

Then there's the problem of publicizing the facts and giving the people an opportunity to have a place where they can come and register their views about noise. The maps that show the routes that are being followed, so they have the facts and also that they can—we sort of encourage that they prepare themselves for noise by proper noise conditioning. And this is done through the news media and also a speaker's bureau.

Those are some of the things that we have done. There's one other action that was taken by the Airports Commission which has to do with all supersonic transports. The Commission passed a resolution, "We resolve that the San Francisco Airports Commission will require for operations at San Francisco International Airport all supersonic transports and other new aircraft to meet at least the same aircraft noise standards applicable to subsonic aircraft as provided for in Appendix C, Part 36, of the Federal Aviation Regulations, with the same trade-off provisions for differing measuring points."

This was a resolution passed by the Airports Commission and given to all interested parties to indicate that we would like to have the new aircraft subsonic—I mean the supersonic aircraft comply with these regulations as a starter.

Now, as you know, the Airport Operators Council International, which San Francisco is a member, has been urging for some time the reduction of aircraft noise. Our first meetings, or the ones that I was first involved with, some of the first of the airport operators were in, about 1965/66, we even began to meet with the Boeing Company, McDonald Douglas, and Lockheed, to see if they could not control noise at the source. And I am happy to say that, after some rather brisk encounters, that the Boeing Company on the 747 did make some real progress in reducing the noise from that which it was first scheduled to be.

The DC-10, if you listen to it and have been around it, is even quieter than the 747. And the Lockheed 1011, according to the manufacturer, will probably be slightly below the DC-10 in terms of aircraft noise levels. You can't just measure them in decibels. Some of it has to do with the area in which the noise exists. The Lockheed 1011, if I recall, has some innovations on the engines that will enable two workers to work around the main engine without any earmuffs. So we are over the hill, I think, and on a downward pull as far as getting the aircraft manufacturers to reduce the noise at the source.

Now the problem is that we have a great number of aircraft that, for financial reasons, particularly in this economy, the airlines cannot abandon. And I think the great problem facing the United States is how do we bring about a program to either retrofit certain aircraft that are particularly noisy or how do we bring about some sensible program to assist the airlines in retiring from service those very noisy aircraft. And I think if everyone understands the difficulties of mawing a change abruptly, that it won't be very many years until we have made substantial progress.

And I think the action taken by the Commission in San Francisco dismissing lawsuits and agreeing to certain things with the people involved is a very positive way in which we get at the problem and in getting something done instead of just having meetings with a lot of noise.

Dr. Meyer: Mr. Carr, thank you very much, sir. I have several questions which occur to me, and I will use the Chairman's prerogative of asking them before asking the panel if they have any.

First, are there citizens groups represented on your Noise Control Center?

Mr. Carr: We don't have a very good representation from citizens groups. I can assure you that we have plenty of citizen participation. We have a regular program where they can telephone in their complaints.

Let me give you a—a list of those who are involved at the present time. There's the airlines: Western Airlines, American Airlines, representative of the Air Transport Association, Delta Airlines, United Airlines, Pan American and Flying Tiger. And then we have a representative for the City, the Assistant Department Director for Operations, and Air West, Qantas, Northwest, and then we have a—a Director for the Sound Abatement District, and also a telephone connection with a secretary available at all times to receive citizens' complaints. And then all of these are answered.

Occasionally the representatives, including the representative for the airport, meets with citizens groups that have a particular problem.

Dr. Meyer: How is this operation financed?

Mr. Carr: The airlines and the Airport and others contribute to the financing of it, of the operation of the Center. The director of the Center is a parttime director. And then we have a fulltime answering service and secretary.

Dr. Meyer: One last question, sir. And I am sure some of the panelists may have some further ones along this line.

I have heard testimony from the Air Transport Association at one of our hearings that California law would undoubtedly cause a major impact on their ability to provide air service into the State of California. I don't want to put you in a bad position, but I would like to have your views as to the impact of the pending state legislation on your airport operations.

Mr. Carr: Well I think to really understand that, we should keep in mind that the airway and airport system is one system, and it's interdependent. For instance, at Los Angeles, it's been reported that there would be a very drastic operational cut at Los Angeles in order to comply with the state law. If I had estimates, 40, 50, 60 percent of the air traffic might have to be reduced in order to comply. If that were to occur, we would have a major drop, very, very close to that. A great deal of our business is between Los Angeles and San Francisco. Los Angeles and San Francisco represent the most heavily travelled air route in the world. And very much greater than the East Coast or other parts of the world. And so we would have that reaction, not because of the problem we might have here at San Francisco, but because the other end of the line would be cut off.

We haven't any estimates right now as to the percentage that would be necessary because of our own operations. We think that it would be much less because we have so much that comes in over water and takes off over water.

Dr. **Meyer**: Thank you.

Mr. **Carr**: Let me say that it should be made clear that the airport operators are—are out front in urging the reduction of aircraft noise. Sometimes, when the legislation is passed and there's difficulty in complying, some people would like to convey the thought that airport operators are siding entirely with the airlines and have a public-be-damned policy and that, therefore, they are all together on one effort. I can assure you that the airport operators were probably urging reduction of noise before it became the thing to do for politicians.

Dr. **Meyer**: Thank you very much. Panel? Mr. Martin?

Mr. **Martin**: No questions.

Dr. **Meyer**: Dr. Dietrich?

Dr. **Dietrich**: I was intrigued by one—one thing you said earlier in your testimony. We talked about a computerized system, which was part of, as I understand it, the noise monitoring system, but would seem to have some other aspects into it to cover such things as landing fees and so on. I wondered whether one aspect of landing fees might be a computerized bill-out rate for noise.

Mr. **Carr**: It could be done. If you had aircraft of a particular type that was difficult, you could have some—some economic muscle by charging more for that kind of a plane. But I think you have to realize that the airlines are in deep financial difficulty in a number of ways. And if we want to maintain the service we have, then there must be some real positive efforts made to find out how the airlines could receive some assistance in getting rid of the noisy aircraft which were, after all, certified by the federal government some years ago.

Dr. **Dietrich**: In the absence of federal noise certification programs.

Mr. **Carr**: That's right. Now I would like to include, too, Mr. Chairman, if it meets with your aproval, I served as the Chairman of the first Environmental Planning Committee for Airports and delivered a paper in Montreal last November. It was published in the Congressional Record on December 9th, 1970, and I can include that with this information for the reporter. And in this—in this paper I think you will see that we have taken a very strong position on retrofit programs for some other means of getting rid of aircraft noise.

Dr. **Meyer**: I would like to have that paper submitted along with the other material, which will all be included with the record, sir.

Mr. **Baron**: A few questions. You say you have a history—the San Francisco Airport has a history of not having had any lawsuits until recently or—

Mr. **Carr**: No, we had an earlier lawsuit which the City opposed and the courts were on the side of the City. There was no damage. And then there were no lawsuits for some time until these more recent lawsuits. One in the South San Francisco Area and one for the people to the south of the Woodside area over these routes coming in from Los Angeles. Those are the two that I mentioned which are settled, for the record.

One is Albright, et al. v. City and County of San Francisco, San Mateo Superior Court no. 158707. And the other suit was Burke, et al. v. PSA, et al., San Mateo Superior Court No. 155749. Those are the two suits that were dismissed.

Mr. Baron: What do you attribute the lack of lawsuits to when we hear so much about lawsuits in other airport situations?

Mr. Carr: Well we are rather proud at San Francisco International Airport of the effort that we have made to recognize the problem and work with the local people. And we have taken some very strong positions with the Airport Operators Council as far as asking the Council to support us in this area. And, quite frankly, I think some of the people who are our neighbors—and we work with all the time—feel that we are doing what we can to reduce noise. And we don't hesitate to get on their side of the fight and there isn't anything to be gained by filing lawsuits except for the lawyers involved. And so I think most of the people feel that as long as the Airports Commission has this rather positive policy of reducing noise wherever we can, that we are going to have a fairly friendly relationship with the people.

Mr. Baron: Could this runway right have been increased in length at a previous time in history?

Mr. Carr: No, it was a financial problem. Runway 1R was approved for an increase to about 12,000 feet. It's been almost seven years ago, shortly after I took this position in San Francisco. The FAA at the time would only give us financial assistance for 10,600 feet. But the Public Utilities Commission, which was the predecessor of the Airports Commission in this area, adopted the staff recommendation that we build it as long as we thought we could, and it's just short of 12,000 feet now. Now that—that fill was made some years ago and we put a surcharge on it, because, you see, all of our airport is built on bay mud and that has been settling. And we have enough settlement now so that we think we can go in and do the paving and put in the utilities and the lights and start to use the extra length of that runway.

Mr. Baron: Wouldn't you say they took the motivation of the lawsuit to get the runway to completed?

Mr. Carr: No, no. We have had a regular schedule where we wanted to move ahead on it, although it doesn't hurt when the attorneys for the plaintiff say that, if we are proceeding rapidly, we can dismiss the suit. That's one of the items.

Mr. Baron: You used the phrase "prepared for noise by noise conditioning." I missed the introduction to that.

Mr. Carr: We worked with the developers and the home builders in the area and try to alert them that there are certain sections if they develop—this is particularly true in the Serra Monte area—if they develop there, then they will be subjected to aircraft noise.

Mr. Baron: And you alert the developers?

Mr. CARR: Yes, at the very outset we alert the developers and the planning commission and others that this is in a flight pattern. And if they are going to have people living there, then they should try to condition their homes as much as possible for aircraft noise. We haven't been entirely successful because I guess some times the dollar takes precedence over noise.

Mr. BARON: Do they have their attorney to notify the proposed —prospective purchaser as to what he is facing?

Mr. CARR: It is not required by law, no.

Mr. BARON: It's an important point, incidentally, that I think we should all take into consideration.

Dr. MEYER: Would you yield, Mr. Baron, while I ask a question also on this.

I can infer from what you are saying, sir, that there is relatively little air space zoning in effect, then, around the airport in these directions on an established trapezoid of flight paths that the local communities haven't established ground use zoning or building code requirements? You have done your chore and which you feel apparently is all you are required to do is tell people about it. But this multiplicity of jurisdictions have not enacted any zoning?

Mr. CARR: There's been a minimum of zoning in the area. And if you want to keep in mind that, for quite a while, there were areas and communities in the vicinity of the airport which were encouraging any kind of development they could get to assist on the tax base and take advantage of the fact that the airport was nearby. And I think now there is a much better attitude toward the livability of the areas than there was in the beginning. And it makes it very difficult to carry out this somewhat theoretical idea. It's fine for a new airport to have land use zoning. But where we have these tremendous investments right under the runways, it isn't practical from a dollar standpoint to make the change.

Dr. MEYER: Mr. Baron, back to you, sir.

Mr. BARON: I was just getting the new concept of the dollar. I'd just like to—to say in the—in fact, in the Environmental Protection Agency ecological aspects and so on, we have a new concept in terms of dollar. Now in terms of what human life is, the degradation of the environment and in terms of the property values, the decline of the property values for residential owners, I just toss that into the hopper.

How do you, as an airport operator, feel about reducing the number of flights by reducing schedules? We hear that so many planes are going off with—with very small loads.

Mr. CARR: Well I think the economics of the situation have taken care of some of the reductions that had to come about, but if we get a continuing growth in the country—and hopefully some economic upturn—then you are going to have another surge of additional flights. I think that isn't the answer. The answer is to continue to strive to control the noise at its source, and that can be done. It's a matter of money.

For instance, on the—on the Lockheed 1011, I think that they have added probably a couple of thousand pounds of noise suppression equipment that wouldn't have been there if it wasn't for the pressures to reduce noise. That means that much less payload, whether it be cargo or people, and environmental protection is going to come about. There's no question about it. And people are willing to pay for some of it.

A good case in point, I think, is—is the type of utility lines that we had in this country for many, many years. And some junior engineer got his instructions on how to put the subdivision together and how to put the poles up and there was never anymore thought about it. And this is the way you did it. And the purchaser, who might be quite willing to pay a little additional cost to have utilities underground, and improve the appearance of a subdivision, never had a chance. Never had a chance to make the choice. And then the utility companies are finding out that, if it is underground, the trees don't knock the wires down in the storms and there are all kinds of economic trade-offs. And I think that people are beginning to realize that the real objective here is the livability of a community. And they are willing to pay something for it.

Now I realize that this is the Environmental Protection Agency, but we also should keep in mind that environment is just one part of ecology. And I think we are more interested in ecology than we are environment. And when it comes to total human ecology, the aviation industry has some very positive points that can be used as trade-offs in finding out what kind of a community we want.

For instance, human ecology is really the relationship of—of man to his resources and environment and the resultant cultural and social and economic institutions that go with it. And I know that some of us would be willing to take a little noise in order to be able to catch a plane and fly to Europe non-stop. And there are all kinds of things that were not possible in this country a few years ago. And they are all part of the total set of cultural and social and economic institutions that have grown up around the man and his particular environment.

Mr. BARON: I can't argue that point, except it was only in recent history that we have started to really think of ecological concepts and, therefore, the weighting tended to be very much on one side.

Just one point, and that is most of your annoyance formula and your NEF, too, and the other techniques for determining land use are based on, among other things, the frequency of occurence. So, therefore, if planes are taking off with very small loads, it seems that airport operators might be interested in reducing the number of schedules from an ecological and environmental point of view.

Mr. CARR: This gets into a basic philosophy. You know in some of the government-owned airlines in Europe and other parts of the world, they tell you when you can fly. And we haven't had that kind of an airline system. We have a system where there's a good deal of competition, and they are trying to offer you frequency of service, and this is quite the opposite of saying if you want to go someplace, you can get on one plane at 10:00 o'clock tonight. If you don't want to take that, you can stay home. So I think we have to decide just what kind of an airline service we want. We have the best in the world. So we shouldn't be forgetting that when we cope with some of the problems of noise.

Now I realize that this is a recent concern for a lot of people, ecology. I designated a place as an ecological preserve some years ago, and had to get up and explain what I was talking about. You know, the word "ecology" wasn't even used in the English language a hundred years ago. But we are sure making up for lost time.

Mr. **Baron**: It's about time we were doing it.

Mr. **Hildebrand**: Just for the record, I would like to say that there are some lawyers who do donate a certain amount of their services, especially those who live near airports.

Concerning the computerized noise monitoring system which you mentioned, I think that should be emphasized that it would not only give immediate feedback, but it would also provide for the accumulation of very valuable data for further study, not only of the airport but also the airplane.

You might be interested to know that the authorities at Tokyo International Airport in Japan have been operating under the assumption that our computer system would be the first one under operation in the world, and it will not go into effect until late this year. So when I return, I will once again tell them they are in second place.

Mr. **Carr**: They may beat us with some of the problems that we have with some of the governmental hurdles that you have in order to get a job done.

Mr. **Baron**: Excuse me. If the Los Angeles Airport wanted to charge a dollar or something for landing the passenger—What did they call that? A passenger-landing fee? And use the noise—this for noise abatement work, wouldn't there be a constitutional question there as to whether this was a federal prerogative with that?

Mr. **Carr**: I have heard of several different types of head taxes going into the airport, leaving the airport all these various things for dedicated funds. Personally I think that the approach we have taken with the Airport Development Act of 1970 is better. We have a tax that is collected by the airlines on the ticket and with the aircraft, and then we set it up so that certain amounts go back to the airports. If it isn't used within three years, it goes into the Secretary's Discretionary Fund, which means that everyone pays the same amount. There's a fund that can be used for various purposes, and if the Congress and if the Secretary of Transportation were to determine that some of this money should be spent in noise suppression or some particular noise alleviation program, then we can do something about it. I don't like to see all this breaking up into various airports. The various airports are going to solve their own problems. It just won't work. I think the federal government has to establish the standards.

Dr. **Meyer**: Any other comments? Mr. Baron?

Mr. **Baron**: Well, no. It's interesting, though, that it seems to be a clear-cut feeling on the part of the airport operators that federal standards are necessary. Doesn't the business of locality and the other arguments—We hear variations in operations and so on, which would lead you to want a certain amount of local autonomy as far as your operational procedures are concerned.

Mr. Carr: Not particularly. We are a part of the United States Government, and we have some rather effective representatives in the United States Government. And it's one government where they keep track of what you have to say on both sides of the aisle. And it may get a little rough and stormy at times, but I think it's a great government and we will take our chances with the federal government any day of the week.

Dr. Meyer: Thank you very much, sir. I appreciate your statement and certainly you have given us some valuable information with regard to a lot of the aspects of the airport noise problem. Thank you for your time, sir.

(MR. CARR INSERTED THE FOLLOWING ADDITIONAL MATERIAL FOR THE RECORD)

THE GREEKS HAD A WORD FOR IT

By Mr. James K. Carr
At the Annual Conference
Airport Operators Council International
Montreal, Canada
November 11, 1970

The word "ecology" according to my best information was used in the English language about 1873, having first been used by the German zoologist Haeckel in 1869. It has gained use in these one hundred years, but nothing like its use in the last two or three years or perhaps I should say—months.

The Greeks had a word for it: "oikos"(house) and "logos" (word) meaning essentially "the study of the house,"—the house we call earth.

In these days the Greeks have an even more urgent concern for the "study of the house"—the house we call earth.

A September 18 UPI dispatch out of Athens said this:

"Smog and jet-aircraft sound waves are slowly destroying the Parthenon, Greece's most famous ancient monument.

"On hot, humid days a light bluish-gray cloud of smog lingers over Athens. It blurs the Acropolis, the majestic hill rising from the City Center.

"Millions of tourists trodding on the ancient floors take their toll on the Parthenon and other temples on the Acropolis. But ecologists and archaeologists say the real dangers are jet aircraft sound waves and erosive car-exhaust fumes."

My assignment this morning is to present a paper on "Environmental Considerations and Airports." It's an immense order to fill--in the time available.

The difficulty of the task brings to mind an airport operator's recent demand that:

"We should have a single governmental agency where we can get final answers on this 'ecology-environment' thing."

That, if it could be established, would have to be the "Department of Everything."

Because of the individual characteristics of each airport and the varied environmental problems of everyone, it would serve little purpose to give you an "environmental shopping list." My assignment can be discharged better if my remarks are aimed at the policy questions. More accurately, there is a need to discuss the basic philosophy from which airport operators should view these latest developments regarding ecology and environment.

Emphasis is needed on basic philosophy because the environmental questions facing us today are essentially ethical questions —moral philosophy questions. The nation's growing concern of environmental sickness is the ethical consequence of sustained ecological abuse.

"In a relatively few years, through misuse of the environment, man is about to do what no man has been able to do in more than 2000 years—destroy the Parthenon. . ."

People's nervous systems in some areas are in the same danger as the Parthenon.

To define our terms:

"Ecology," in sociology, is the relationship between humans, their material resources, and the consequent social and cultural patterns.

"Ecology," in biology, deals with the relationship between living organisms and their environment.

"Environ" means to surround, enclose, encircle. To the airport executive, breathlessly striving to keep pace with expanding airport demands, "environ" seems to mean entrap and frustrate, since environmental concerns cause so many more hurdles in getting the job done.

The airport executive probably thinks he has further jurisdiction for his "dim view" when his airport's expansion program, demanding federal aid for financial feasibility, must now be thoroughly reviewed in light of several laws, including—

The Environmental Policy Act of 1969 (Public Law 91-190) and the environmental provisions of

The Airport and Airway Development Act of 1970 (Public Law 91-258).

The airport operator's emotional upset is heightened when he first sees the several pages of the important FAA Order 5050 on Interim Instructions for Processing Airport Development Actions Affecting the Environment and attachments.

The relationship of the airplane to natural resources and people no longer exists that existed a relatively few years ago when in 1932 Bob Reeve, Alaska's first glacier pilot, climbed off a freighter at Valdez, to push back the world's air frontiers.

The environmental situation is vastly different. With jet engines, larger planes, and the crowding of people into metropolitan areas, that earlier relationship has undergone a profound change—and fast.

Airport planners and engineers have lost the luxury of establishing an airport without consulting dozens of governmental agencies and considering sometimes millions of people who are demanding an end to noise, air and water pollution.

"Ecological Judgment Day" has arrived.

Airport engineers and planners, and a host of associates in the aviation industry must realize Airports are for people.

People must realize that they are only a part of Creation, even though they are the most important part.

Airports are complicated transfer points between air and ground transportation. They are places where travellers' service requirements must be met. Airport developments should be measured by these fundamental objectives.

Nothing speaks to us more forcefully of our ned for an ecologically cautious approach to any physical changes of the landscape than the photograph of "spaceship earth" from the moon and the realization of the thin layer of it that supports life.

The members of this organization, especially the international members, are well aware that present day aircraft can encircle "spaceship earth" in a relatively few hours. When the SST is flying, the time of encirclement will be much less.

The effect of aircraft and airports then on the total environment in this thin layer that supports life, will be more important than ever.

Man lives off the resources of the earth as well as on it. The thin-layered surface envelope of the earth where man lives, if ignorantly exploited, can result soon in disastrous consequences.

Socalled technological success, unless put and kept in proper perspective with overall human needs, can merely mean a skyrocketing increase in personality-fragmenting, alienating, psychological experiences.

Noise pollution is a prime example of the threat.

Within the lifetime of many of us, the nostalgic sounds in rural areas that were so well described as "the lowing herd . . ." and "the drowsy tinklings that lull the distant folds" in Gray's Elegy, have been supplanted or inundated by the seemingly constant jet engine roar near many of the major metropolitan airports.

We must muffle the maddening decibels. More than our hearing is at stake. We cannot let an "atheism of noise" destroy our soul. Nor can we close our ears to the rising chorus of concerned citizens demanding cleaner air, cleaner water, and a more livable land.

"Let's face it:" You and I know that airports are not responsible for all these environmental problems. The jet engine is in fact one of the more efficient power packages yet developed. But in so many cases airports are the visible target.

Airplanes in the San Francisco Bay Area, for example, cause far less than one hundredth of the air pollution caused by automobiles in the same area. But it is the airplane with its carbon fall-out that is highly visible.

We well know aviation ecology problems extend far beyond the responsibilities, capabilities, or authorities of Airport Commissions and Boards of Directors of airport agencies. However, it is easier to take aim on an airport and its policy makers than dozens of different airlines. Airports are out in front—like the "professional Irish" marching on St. Patrick's Day.

Regardless of the tendency to blame airport operators for all the ecology upsets caused by the aviation industry, those responsible for airports must determine as best they can the areas where airport commissioners and their staffs can be effective in the necessary effort to protect and enhance the environment. One particular very important example comes to my mind.

There is an invisible, weightless, non-toxic pollutant—it is called "noise." In the fight against unnecessary noise, the AOCI has an outstanding record. The AOCI can continue to improve that record.

Airport operators must not relent in their drive to bring about a retrofit of engines on existing aircraft to reduce the present unnecessary noise pollution. These same out-of-date engines spew visible pollutants making airports a prime target for everyone who is fighting dirty air.

AOCI President Matt Lukens spoke well and accurately about noise and "retrofit" on January 23, 1970, when he stated:

"One of the most difficult conditions we face is aircraft noise. The overwhelming public reaction to excessive aircraft noise has resulted in restrictions to operations and widespread opposition to expansion of existing airports or development of badly needed new airports. The technology to reduce aircraft noise at its source exists.

"We have the legislative and administrative tools to implement that technology."

As an example of public indignation about noise, San Francisco International Airport and four airlines were sued a few weeks ago and alleged damage to homes by families on the San Francisco Peninsula living more than twenty-five miles from the Airport.

It is this type of citizen concern in so many areas that prompted AOCI President Lukens to take issue with the Honorable Secor Browne, Chairman of the Civil Aeronautics Board (CAB) when Chairman Browne was quoted as questioning the value of retrofitting aircraft engines now.

It is important to note that President Lukens emphasized:

"No one has ever suggested that the airlines alone should meet this cost."

With this statement, the members of AOCI agree.

Both as to cost and technology Mr. Lukens is well supported by the NASA-Douglas-Boeing-Rohr studies of retrofit. He is also more than well supported by the public demand that something be done about it. Development of a new power package, in lieu of a retrofit program, will just not happen soon enough.

Another point that should be made clear is this:

"Airport administrators are all too well acquainted with the airline industry's present financial problems."

Quite logically, we cannot pay for expanding airports, nor can the government collect its project tax revenues unless we have financially healthy airlines.

Financially healthy airlines, in turn, help create financially healthy airframe manufacturers. Financially healthy airlines and airframe manufacturers mean more jobs—and a better business economy.

We are all in this together—airports, airlines, airframe and engine manufacturers. Together and—only together—we shall solve them.

President Lukens and airport representatives demanding programs to "retrofit" as fast as possible don't disagree with Chairman Browne that traffic control procedures should be taken wherever possible to abate noise. Neither do they take issue with Chairman Browne's statement that as an industry and a nation we "should be forward looking to totally new power packages."

Time doesn't permit a full discussion of the need to eliminate, as well, visible emissions from jet engines. "Carbon fallout" is one of the greatest public relations problems for airport operators. Retrofit would eliminate this as well as curb the devastating decibels of aircraft noise.

Some mornings from south of San Francisco International Airport the nearby San Bruno hills can hardly be seen. At peak hours from Interstate Highway No. 280 there is the appearance of rainfall from "carbon fallout" on takeoff. This pollution can be and should be stopped as soon as a program can be adequately financed. Admittedly, some short steps are being taken to alleviate the problem, but they should be long strides.

I have painted a bleak picture. Now, let's see if there isn't a brighter outlook.

Having been immersed in this ecology-environment subject for many years, and just recently participating in a two-day FAA workshop regarding largely Ecology and Airports sponsored by the AOCI and others, I want to assure you it's a new day in planning airports or expanding them, but it's not all bad.

First—a great number of dedicated people in various governmental agencies are hard at work.

Even President Nixon recognizes ecology considerations almost create a "Department of Everything" problem.

To solve it, The President has recently established a four-sided pyramid organization with the President's Council on Environmental Quality playing a very important role.

The National Oceanographic and Atmospheric Administration, the Department of Interior; the Environmental Protection Agency are involved; and there may well be more sides to the pyramid before it's over. The President must make the final decisions.

Secondly, don't be too critical of the Department of Transportation or the FAA if you seem to be engulfed in paper work regarding ecology and environmental considerations.

The officials of the FAA have been given the job of carrying out the intent of the Congress. If you think it's an easy assignment just read--and reread Section 16 of the Airport and Airway Development Act of 1970.

With this new emphasis on total environment, airport operators should not "take a back seat" in pointing out the enhancement of man's total environment—the enrichment of our lives because of air travel.

Airport officials can proudly point out—the improvement of livability—the better communication and the extensive education of millions of people that result from the present stage of the aviation industry.

Airport operators in various areas have played a part in enhancing total livability—helping provide the economic base for cultural improvements that could never have otherwise been financed. For example, the growth of the San Francisco Peninsula and the development of colleges, theaters, and many other cultural activities would not have been possible without a prospering San Francisco International Airport and its effect on the local business economy and tax base.

The Los Angeles plan of "satellite airports" will be a principal factor in spreading the population of Southern California and reducing the overcrowding that has brought on so many other environmental problems in that area.

The State of Idaho's unique system of airports in beautiful wilderness areas has made these areas usable without ruining them with roads.

Conservationists have even suggested a moderately-sized airport, tied to public transportation, on Cape Cod Seashore Park which would be far better for the environment and people than the multi-lane freeway that would otherwise be necessary to move crowds along that narrow strip of land.

It's a relatively minor thing—but by cooperating with the State Department of Fish and Game, a land fill at San Francisco International will have a scalloped edge to develop shelter and breeding areas for fish where otherwise the currents would have been too strong for fish propagation.

I mention these things to emphasize that airport developers can turn some of these seeming obstructions into opportunities. It can be done by an honest consideration of the concerns and problems of others.

The very recent workshop session with FAA officials was certainly encouraging. The questions and answers made good sense.

The FAA representatives admit that going "strictly by the book" or "disregarding the book" are two extremes to be avoided in preparing a case. They are reasonable representatives of the federal government trying to do their job.

Airport operators can expect an exercise of good judgment by FAA officials. Airport operators must, however, not just accept—they must welcome "environmental review."

If not, the danger signs are up higher on airport expansion. Already the CAB has placed restrictions on flights in and out of five airports.

Failure to meet environmental needs can spread the signals of distress and can choke airport activity.

All of these "environmental developments" mean there must be a greater emphasis on sensible planning. Above all—airport operators must anticipate their needs well in advance—I repeat well in advance. There will be no other way to escape a delay in converting plans into programs if the law is to be carried out as intended by the Congress.

The Palmdale proposal of the City of Los Angeles is an excellent example of how necessary it is to anticipate the closest kind of scrutiny and be prepared for every kind of environmental question.

The morality of environmental concern boils down to this: Technology and its great benefits and the economic activity it generates must be used to meet real human needs. We realize that development is the basis for our economic system. There can, and will be, great benefits from an expanded aviation system, but we must be honest enough to recognize limitations in crowded areas, particularly.

To sum up this assignment, I should like to conclude with awareness of the need for airport commissions to establish positive policies based on a philosophy of stewardship that is much broader than anyone believed would be necessary a few years ago.

To establish such policy one needs to face some philosophic facts.

Frankly, as with the understanding of death, the ontological approach is essential—leave the Creator out of Creation . . . and you will get the wrong answer—or no answer at all.

It is my privilege to represent a City and an International Airport names after the world-renowned St. Francis of Assisi. To some he is known only as a lyrican mystic with a poetic love of animals.

A closer examination of his beliefs explains why he has been proposed as the "Patron Saint of Ecologists." His writings and his life expressed the view that man must respect all Creation. The clarity of his insights shed some valuable light on the ecological problems of today.

Although as the Eighth Psalm tells us, man has dominion over other creatures—St. Francis makes it clear that having "dominion" does not authorize tyranny or turhless exploitation.

Man has no charter for abuse of creation—animate or inanimate. There is a real interdependence in nature. Man enjoys a delicate tenancy in the Creator's world and a heavy responsibility of stewardship goes with it.

Thus, you can see that influenced by St. Francis of Assisi—the man for whom San Francisco International Airport is named, I advocate an aggressive, vigorous ecological policy by the AOCI that considers the relationship of airports to the rest of Creation.

The world should be informed how aviation and airports have increased mobility, broadened communication, and improved education beyond our dreams. Properly planned aviation an airports can and will in many ways improve man's total ecology sociologically in the future.

We shall have to approach the problems honestly and with the humility of a St. Francis. We must above all recognize the real and earnest concern of others about the future of man's environment and the effect of airports upon it.

That philosophy and resultant policy will give airport expansion and the aviation industry a new thrust in a world where change is the most certain thing we know. Environmental review can then help rather than hinder.

This can mean a change in the direction of true conservation which really means the wisest use of the resources that have been bestowed upon us—the highest form of national thrift.

If the members of this organization assume this policy of broadened responsibility for the effect of airports, then we will have embarked upon a new era of "ecological considerations and airports," which will improve the livability of this thin layer on "spaceship earth"—the only home we know.

Dr. **MEYER**: I would now like to ask Dr. Thomas Geers, Chairman of the Noise Abatement Committee of the Town of Portola Valley and Coordinator for the Peninsula Noise Control League to come forward, and we would like to hear your side of the question.

STATEMENT OF THOMAS GEERS, NOISE ABATEMENT COMMITTEE, PORTOLA VALLEY, CALIF.

Dr. **THOMAS L. GEERS**: Thank you, Dr. Meyer.

Gentlemen, I would like to express my appreciation to this board for taking time to hear directly the views of the public with regard to the growing pollution of our environment by noise.

When first learning of this opportunity to be heard, I must admit to having experienced the temptation to describe, in detail, the anger and frustration that I and many others feel with regard to this state of affairs. This would be counter-productive, of course, for you are fully aware of these reactions, having experienced some of them yourself. Hence I will restrict my testimony concerning the magnitude and extent of the problem to the showing of a short film about the acoustic environment in the vicinity of the San Jose Airport.

Incidentally, I was very interested in Mr. Carr's statement. I think one might agree that San Francisco Airport is a relatively mature airport compared to San Jose. I think that a number of us in the South San Francisco Peninsula area were involved in the lawsuits, and we regard these lawsuits as a kind of a maturing influence on the airport. And on that basis I think you might agree that the San Francisco Airport is probably a more mature airport than the San Jose Airport.

Dr. Meyer: Very good, sir.

Dr. **GEERS**: However, we intend to keep this up for fear that the San Francisco Airport might regress in its forward-looking stance.

I would like to show this film that shows a relatively maverick-like airport, the San Jose Airport. It was made by Mr. Anthony Escobar, a political science student at the California State College at Hayward. Mr. Escobar will now narrate the film.

Mr. **ANTHONY ESCOBAR**: Thank you, Dr. Geers.

The purpose of my film is to relate jet aircraft noise levels experienced by members of two communities near San Jose Municipal Airport. Now what you will see in the film is a take-off and in a northern direction and then I show the northern community where I took the first set of readings and then I show the approach from the south, going in a northern direction, and then I show the community, the southern community, where I took the second set of readings and then we—then that's it. We land.

So if we can turn off the lights, I will turn the projector on.

While we are waiting, I can explain the meter I used. It was a Hewlett-Packard sound impulse level meter, and it costs—it was approximately $1,800. The meter had been calibrated approximately two days prior to my taking the readings on or about July 24 of this year. And the engineer explained to me how to use it. I was an electronics technician for about six years, so I am familiar with meters.

Are we ready?

(Movie being narrated)

This community is within the Santa Clara city limits and is approximately two air miles from the end of the runway. It was formerly known as "Agnew" and the sound level readings were taken at the corner of Cheeney and Chestnut Streets. Agnew State Hospital is within one mile from the reading location. The following aircraft monitored in this community were on a northern take-off pattern and approximately 750-1000 feet in altitude:

#1 Boeing 737 . . . . 100 plus dB-A
Function: 90
Sweep: 10 plus
#2 Boeing 727 . . . . 110 plus dB-A
Function: 100
Sweep: 10 plus
#3 Douglas DC-9 . . . . 104 dB-A
Function: 110
Sweep: —6
#4 Boeing 737 . . . . 98 dB-A
Function: 110
Sweep: —12
#5 Boeing 727 . . . . 110 dB-A
Function: 110
Sweep: -0-

This community is within the San Jose city limits and is approximately ¼ air miles from the end of the runway. The readings were taken near the corner of Vermont and Walnut Streets. The following aircraft monitored in this community were on a northern approach pattern and approximately 100 to 200 feet in altitude:

#1 Boeing 727 . . . . 120 plus dB-A
Function: 110
Sweep: 10 plus
#2 Boeing 727 . . . . 125 dB-A
Function: 130
Sweep: —5
#3 Boeing 727 . . . . 125 dB-A
Function: 130
Sweep: —5

Because of the time of year, I was unable to monitor the noise of jet aircraft taking off and approaching in a southerly direction. I can assure you from personal experience, however, that jet aircraft noise in the "northern Community" is about the same as that of the "southern community" when aircraft are approaching in a southerly direction.

Through the course of my research, I have been given to understand that San Jose Airport officials have somewhat of a "land buying policy" of areas near the airport. My personal interviews with numerous landowners residing in those communities previously mentioned revealed, however, that they were not aware of a "San Jose Airport land-buying policy."

An advisory committee on noise authorized by the California Legislature presented the following criteria based on the harmful effects of noise:

Harmful Effects	*Noise Levels at Which Harmful Effects Occur*
Prevention of Hearing Loss	75-85 dB-A
Prevention of Extra-auditory Physiological Effects	65-75 dB-A
Prevention of speech interference	50-60 dB-A
Prevention of interruption of sleep	35-45 dB-A

In summation, a comparison of my readings and the criteria presented above will show that jet aircraft noise levels in those communities are extremely detrimental to the health and well-being of the citizens. The health of these people is being affected now and long-rang efforts to reduce jet aircraft noise, while obviously desirable and necessary, will not repair or justify the damage being done right now.

Dr. GEERS: I believe that all of us realize that the Environmental Protection Agency cannot be asked to carry the full burden of noise pollution control. Since much of the corrective action will have to be taken by state and local governments, I would like to describe briefly the noise abatement activities of some communities located at the southern end of the San Francisco Peninsula, and those activities of the State of California that we have found to be especially helpful.

ACTIVITIES OF SOUTH PENINSULA MUNICIPALITIES

The activities I will now describe have been undertaken either singly or in a mutual cooperation by the towns of Los Altos Hills, Los Altos, Woodside, and Portola Valley. These activities are:

1. The establishment of standing noise abatement committees, or their equivalent (all four communities).

2. Conduct of a noise-complaint telephone survey. During two weeks in the Spring of 1971, 139 unsolicited complaints were received from a population of 1,000 family units, 50 percent pertaining to motor vehicles, 26 percent to aircraft, and 24 percent to miscellaneous sources.

3. Consultation with the Federal Aviation Administration concerning the routing of jet aircraft. These activities have produced significant relief for the communities involved because of the responsiveness and flexibility of the FAA. We express our appreciation to the FAA for its cooperation.

4. Assignment of a special Noise Control Deputy for motor vehicle noise control. Law enforcement personnel are hired on an overtime basis for special patrols; their primary function on these patrols is to cite operators of excessively noisy motor vehicles for violation of Sections 27150 and 27151 of the California Vehicle Code.

5. Resurfacing of an excessively noisy expressway. The surface of an expressway passing through residential areas contained a rough aggregate (chip-seal coating) that produced unacceptably high noise levels. Resurfacing with a smooth coating (slurry seal) reduced traffic noise significantly.

6. Enactment of a Comprehensive Noise Ordinance. An ordinance covering excessive noise from persons, animals, motor vehicles, machinery, and aircraft has been put into effect. Violation of the ordinance constitutes a misdemeanor punishable by a fine not to exceed $500 and/or imprisonment for a period not to exceed six months.

7. Organization of the Peninsula Noise Control League. Because many noise pollution problems are regional in nature, and because many actions taken by a local community are more effective if done in cooperation with other communities, the noise abatement committees of the four towns above, along with individuals from other communities, have formed a regional noise control league; in addition to facilitating communication and reducing duplication of effort, the league is engaged in public information activities (e.g., the printing and distribution of "NOISE DESTROYS" bumper stickers, and the presentation of an annual Noise Reduction Award to recognize an individual or company for its noise-reduction efforts), and is fostering growth by aiding the establishment of noise abatement committees in other Peninsula municipalities.

Before leaving this topic, I would like to mention some major problems we have encountered. Our biggest problem is enforcement. Law enforcement agencies are less than enthusiastic about noise-pollution control, and court calendars are too full for proper disciplinary measures. Another problem is size. Enforcement problems, aircraft noise problems, etc., are generally too much for a single community to handle. For example, low-flying private aircraft will be able to violate regulations almost at will until their identification markings are moved from the fuselage to the undersides of the wings; efforts by single communities to get cooperation from county airports have been unsuccessful.

A third major problem is lack of funds. Rising education and welfare costs have led to property tax rates that have produced strong resistance to requests for local funding for other purposes. Noise citations are almost always compliance citations, which generate little revenue. The introduction of fines leads directly to the crowded court calendar problem.

PARTICULARLY HELPFUL STATE ACTIVITIES

Actions taken by the State of California that have proven or should prove to be especially helpful to us include:

1. Enactment of the California Vehicle Code Sections 23130, 27150, 27151, and 27160, which deal with excessive motor vehicle noise. Section 27150 constitutes the backbone of our present enforcement activities.

2. Establishment of "Noise Standards for California Airports." This act, if effectively implemented, offers promise of considerable relief from aircraft noise.

3. Submittal of the "Report of the California Department of Public Health Advisory Committee on Noise to the 1971 State Legislature." Laws are now pending in the state legislature based on the recommendations of that committee.

4. Submittal of the "California Highway Patrol Passenger Car Noise Survey." Data collected in that survey contributed to the

amendment of Vehicle Code Section 23130, in order that it contain realistic motor vehicle noise limits.

Whereas the noise standards for California airports have yet to be imposed, the relatively long-established motor vehicle noise pollution laws have pin-pointed the biggest flaw in the state's performance: lack of enforcement. Of 132,000 noise citations written by California Highway Patrol (CHP) members assigned to road patrol enforcement in 1970, 114,000 (85 percent) were merely warning citations. This encourages a common practice: the cited individual demonstrates compliance at the CHP Station, has his citation canceled, drives around the corner, and rips off his muffler.

Another problem for the state has been severe budget constraints. Only six CHP noise measurement teams exist for the enforcement of Vehicle Code Section 23130 (a quantitative and hence rather precise provision). Promises of more such teams have not been kept. The enforcement of Vehicle Code Section 27160 (a quantitative provision for new vehicles) is severely hampered by budget constraints.

REQUEST FOR ACTION BY THE FEDERAL GOVERNMENT

I would like to conclude my statement with comments concerning past and possible future action by the federal government.

First, we of the above South Peninsula communities express our appreciation to the federal government for the cooperation we have received from the FAA and for the sponsorship of extensive research in jet-engine noise reduction. We are also pleased to have the promise of major benefits from the National Environmental Policy Act of 1969. We are currently scrutinizing the provisions of that act for application in our work. We greet the Noise Control Act of 1971, as proposed by the administration, with major reservations. First, it is too weak. Second, it poses the threat of pre-empting tougher action by individual states. THIS IS A CRUCIAL FLAW. Senator Alan Cranston's amendments to the bill are important and constructive.

With regard to possible future actions by the federal government, may I suggest the following:

1. Redirection of significant amounts of federal highway funds, as well as other funds, toward federal, state and local noise-reduction activities—especially the construction of noise barriers along freeways.
2. Delay of highway and airport construction until effective noise-reduction design features are incorporated.
3. Development of federal noise-emission standards for motor vehicles (including tires), and aircraft (commercial and private) without pre-emption provisions.
4. Development of effective procedures and equipment for the enforcement of noise pollution laws.
5. Education of the American people as to the environmental degradation caused by noise pollution and the fact that solutions are possible. This may be done through radio and TV public service messagers, which constitute a relatively simple and highly effective vehicle.

Thank you for your interest and attention.

Dr. **Meyer**: Thank you, Dr. Geers. I'm sure the panel may have a question or two.

Mr. Martin?

Mr. **Martin**: Let me just go back to this idea of pre-emption. The fact that there's a significant lack of funds at—at the local level or the state level to enforce many of these laws, if the federal government only sets standards, do you believe that they would then have to provide the financing to all the local communities that wish to do their own enforcement? Otherwise, their standards would be fairly meaningless if there are no funds for enforcement.

Dr. **Geers**: That's right. And the—I would guess that the federal government would be helpful if you would provide seed money for such enforcement activities. The burden will finally rest for this enforcement especially on the local communities and with the remark—earlier remarks about a freeway that passes from one town or through a number of towns, it's clear that you can't have individual communities establishing their own provisions or regulations concerning noise limits. Otherwise we will have noise traps like we had speed traps. But it is feasible for these communities to have action on their local roads.

It is feasible for the state to have flexibility for that portion of the freeway which passes through the state. Certainly there are great lengths of freeways that are entirely enclosed within a state, and I think that the precedent set in the air pollution standards for automobiles wherein the federal government allowed the State of California to have tougher standards is a very useful precedent on which to base our noise—the noise abatement activities.

Dr. **Dietrich**: I'd like to follow-up just a little bit, if I might, on that last comment of yours.

As I recall it, the federal government's accession to California's wishes to be allowed to have tighter standards for automotive air pollution followed an essential fact that the finding that California had a more severe problem than elsewhere. Are you claiming that California has a more severe problem with respect to noise as well as air pollution?

Dr. **Geers**: I think that's true. As I stated before, the—certainly in the air corridor problem, our air corridor in San Francisco and Los Angeles is the most heavily travelled in the world. We have certainly the greatest motor vehicle population of any state in the Union. And motorcycles are among the worst offenders. So I think we do have a worse problem.

Dr. **Dietrich**: Yes. I recall your comment that most motorcyclists modify their vehicles based on some statistical studies that our firm has done. And we find that the number is high, although I can't claim most. I find 40 percent is about the ballpark figure and that is, of course, way, way more than the number of people who modify their automobiles, for instance, to make more noise.

Dr. **Geers**: Yes, definitely. We do have a more serious problem in California because a study by Los Altos Hills Noise Abatement Committee found 70 percent of the motorcycles that they examined were purposefully altered.

Dr. **Meyer**: I'm sure the Chairman of the Motorcycle Industry Council who is going to testify tomorrow will have some interesting comments on this.

Seriously, they are very concerned about this. The problem of how to keep people from modifying a product that has been built with some standards. I think you really have got a point here that needs some real consideration.

Anything else, Dr. Dietrich?

Dr. **Dietrich**: No.

Mr. **Baron**: I would like to elaborate for a moment on—You used the word "cumbersome" referring to the measuring techniques, I take it, on the motor vehicle law.

Dr. **Geers**: 23130.

Mr. **Baron**: Do you want to just explain?

Dr. **Geers**: All right. The way 23130 is enforced, it requires at least two officers to enforce it. They have to find a clear, open roadway, and they station themselves in—somewhat in a procedure somewhat similar to the radar traps. Traps is a bad word but—but the terms—

Dr. **Meyer**: Mr. Hildebrand, our lawyer, might object to the use of such a phrase with regard to enforcement procedures. But go ahead, sir.

Dr. **Geers**: Well one man sits at the meter and one man is in a car and the—it requires—there's very, very strict procedures as to how much area there must be around and the distances involved. And there must be no trees and/or anything like that. And they set it up and one man reads the meter and the other man writes the citation. And up until this, now they gathered this data for this noise survey and I recommended this noise survey to the board. I imagine some of you are familiar with it already. Very useful, because it presents the data and the probability data, and—

Dr. **Meyer**: This is the California Highway Patrol?

Dr. **Geers**: This is the California Highway Patrol Report and this has been the primary consideration of these noises themselves that they have been able to gather this data. But how can a local community possibly afford to set up—to get this equipment set up and monitor this with two deputies.

Mr. **Baron**: All right. Now—Now you are saying that the state itself, which supposedly has somewhat more funds than the local communities, only has six—

Dr. **Geers**: For the whole state.

Mr. **Baron**:—therefore, are you making a statement about the fact that this particular method is one that certainly does not—seems not to lead to enforcement, or is there something else that you want us to draw from your statement about the word "cumbersome" and this elaboration that you just gave us?

Dr. **Geers**: The word "cumbersome" refers to the difficulty of a local agency in trying to enforce this law.

Mr. **Baron**: But you said it's also difficult for a state.

Dr. **Geers**: It's not difficult technically. It's difficult financially. But, of course, the results are the same—non-enforcement.

Now one other thing is that the six units are caught between the devil and the deep blue sea, or they have been, because the

Legislature—because it did not have any feel for what levels it should set in 23130 and it set them way high for fear of disrupting the automotive industry or the automotive public, and so the first—the first set of citations were warning citations, if any, and those were mostly written under 27150 because the deputies knew that the vehicles were too loud. So that they were not really in violation of the original law, 23130, because the levels were so high. And then when they said well, now, we want to expand our noise abatement teams, when they went to the state government and said now we have got six. We need more. But the state government said you haven't made any money to cover your expenses. Of course, these are expensive because no one is found in violation of the law. So that's—What do you do?

The only thing you can do is to lower the limits and to spend the money initially and it will come back if you are allowed to write citations.

Now you go to court with these citations, and the judges perfectly reasonably say we have so many automobile thefts and serious criminal offenses that we are not going to clog up our court calendar with a bunch of contested noise citations. So the deputies are undercut in every way possible.

Mr. **Baron**: Even with the two-man team where you have evidence, and so forth, and so forth, they, the judges, still have th[illegible] attitude?

Dr. **Geers**: There have been cases where they have actually—actually have gone to court and the judges have allowed this to happen. But if it happens on a large scale, it will be disaster for the courts.

Mr. **Baron**: Is there any acoustic expertise on your committee?

Dr. **Geers**: Yes.

Mr. **Baron**: And are they—Did they find that the system as set up requires setting up the measurement standards, and so on? Do they have any criticism of it? Do they accept it?

Dr. **Geers**: What we would perfer to see is that a—a means by which the patrolling deputy could carry a hand-held noise meter and just set it down on the ground some distance behind the vehicle in question. You know, if he sees somebody he thinks is too loud, pull him over, set it—the thing down and have him rev up the engine. While we can do it technically, because we have technical people on our committee, to ask a sheriff's deputy or a California Highway Patrolman or a local law enforcement member to again add that expertise on top of all of his other requirements is a severe burden.

Mr. **Baron**: I think we have a point here that I find anyway very significant and that is in whatever enforcement procedures are involved, they must be such that they don't have built into them restraints on the application of expansion.

Dr. **Meyer**: I agree with you, Mr. Baron. I hope tomorrow to ask the California Highway Patrol, because I think it would be unfair to ask you this, sir. How many of the 28,000 citations which weren't warranted citations resulted in convictions? I won't ask you that, but I am going to ask the highway people that tomorrow.

Dr. **Geers**: Okay. Fine.

Dr. **Meyer**: Mr. Hildebrand, this is your area of expertise.

Mr. **Hildebrand**: Staying with Section 23130, I note in Section (b) of that it says "the Department," which I assume is the Motor Vehicles Department, "shall adopt regulations establishing the test procedures and instructions to be utilized."

This section itself is not terribly cumbersome. It says it doesn't require two people. It only prohibits a certain decibel limit measured 50 feet from the center line of travel.

Dr. **Geers**: Yes. Now the actual—it—the—the actual details are contained in a—What is the name of it? GP. What in the world would that stand for? General procedures for the California Highway Patrol, 73.1, I believe, and that is the one that delineates the procedures.

Mr. **Hildebrand**: I see. The point I am getting at is did the Highway Patrol make this enforcement cumbersome, or did the State Legislature?

Dr. **Geers**: No. I don't believe the legislature empowered them to set up their own procedures.

Mr. **Hildebrand**: They set up a procedure which was cumbersome?

Dr. **Geers**: Yes. Except when you say 50 feet from the center of the roadway, I think—I mean they took—Maybe they were a little over-enthusiastic about being careful, but they took reasonable precautions. You set a meter 50 feet away from the roadway and you can't get near barriers. You have to have two men, one to read the meter and one to write the citation or pick up the fellow who's moving.

Mr. **Hildebrand**: Not necessarily. I wanted to point out in Connecticut they have an electronic system which is set up within —they have somewhat similar regulations as to distance. It's on the British system, so 25 feet, I think. And they have an electronic system which, if a car comes by which is excessively noisy, it trips a—a switch, and that car, the license plates are photographed and also in the picture is a—a decibel reading on the meter. And at the same time it alerts the patrol car which is on down the road. And this is done quite openly. There are signs on the turnpikes which say that the—that the noise is being checked on the car.

Mr. **Martin**: Might I cut in just a moment? It happens to be the CBS Laboratory system that you are referring to, and I don't believe that's in use in Connecticut as yet.

Dr. **Meyer**: It's been reported they are going to put it in use.

Mr. **Hildebrand**: It is in use, and I have statistics. It's 11 percent, or maybe it was only tests.

Mr. **Martin**: It's been tested, but it is not put in use.

Dr. **Meyer**: I would like to suggest in regards to the specifics of this that we get into a discussion of this tomorrow with the California Highway Patrol people who will be here. I think we are going to have four of them appearing at one time, and I would like to follow up on this further when—when they are here.

Dr. **Geers**: Let me just make this one final comment. With regard to highway noise, we would be much better off if this whole system could be removed from the courts.

Dr. **MEYER**: That's true.

Dr. **GEERS**: If we can—If we could remove the enforcement system from the police system, we would be better off, because the police come back with the—everything is so reasonable, but the net result is chaos. They come back with a perfectly reasonable statement that they have frustrations, all kinds of criminals to deal with, and noise is way down on their list. The courts say exactly the same thing. We have got to set up some type of an enforcement procedure which gets around this cumbersome court procedure that we have set up for much more serious offenses.

Dr. **MEYER**: That last suggestion is one which we clearly must take a look at. It is obvious in the studies done by George Washington University for us and some other people that this cannot function very effectively if it's under the criminal law provisions. In the Administration's bill and also the non-Administration bills pending in Congress, the offenses will be treated as civil offenses.

Thank you very much, sir, for a very stimulating presentation, and I appreciate your participation.

Dr. **GEERS**: Thank you.

Dr. **MEYER**: I should now like to ask Mr. Kenneth Scheidig, Assistant City Attorney from the Town of Walnut Creek if he is here.

I would like to point out while he's coming up that we will stay to hear you as long as you are patient and willing to allow the other folks the privilege to talk. The purpose of these hearings is to receive information. We hope some of the audience will stay, but it's not really so much for the audience's edification as it is for the government to obtain information. So we shall, indeed, stay with this just as long as necessary to hear each witness who is here.

Please proceed, sir.

STATEMENT OF KENNETH SCHEIDIG, CITY COUNCIL, WALNUT CREEK, CALIF.

Mr. **KENNETH SCHEIDIG**: Gentlemen, the City of Walnut Creek Council has asked me to speak to you today on the question of noise and our environment because basically we feel that while air pollution and water pollution are quite visible and, therefore, before the public's eye, all the time noise is something which we can become accustomed to in some respects and, therefore, overlooked. And so we are very happy that these hearings are taking place.

We recognize that, while it is not possible for use to return to the early days of quietness in rural communities or in the nation, that something can be done about our noise problem.

During the past few years, a great amount of public concern has been generated over the status of our environment and the need to take immediate action in order to protect, preserve and rehabilitate that environment. The major emphasis, at least ostensibly, has been on air and water pollution mainly because these are visible, tangible elements of our environment. However, an equally important factor in the environment is noise. Noise is an important environmental element, as is air or water. This is due to the fact that although noise is an intangible pollutant, it can affect the mental and psychological attitudes of the nation's populace to a greater degree than do the other pollutants. As stated by Dr. Verne O. Knudsen, physicist and former Chancellor of the University of California, "If the noise we make keeps increasing at the present rate, it will be as deadly in 30 years in some of our downtown cities as were the ancient Chinese tortures for executing condemned prisoners."

While it would be a "pollyanna" viewpoint to expect that we can return to the natural quiet of this nation's earliest years, yet a vast improvement upon our existing "noisy" condition can be made.

Ideally, the regulation of noise can be instituted at three governmental levels—national, state and local; however, practically speaking, these governmental levels do not overlap so as to blanket the entire area of noise pollution. Loopholes are created in the interaction of these three levels due to the doctrine of pre-emption. As you are probably aware, this doctrine holds that if one level of government, for example the state, has intent to control a particular field, another level of government—most particularly local government—cannot regulate in the same area. The most illustrative example of this, from the local government's point of view, is the regulation of noise generated by the automobiles, trucks, motorcycles, and freeways. Due to the fact that the State enacts regulations for the control of these vehicles, or is vested with the authority to construct these major highways, local communities do not have any authority to place more stringent restrictions upon the noise generated by the above.

The application of the doctrine of pre-emption in this area is especially unfortunate to local governmental agencies since they are the ones who are closest to the public. Citizens who have become irritated by these bothersome noises look to their local officials for action and justifiably demand that something be done. It is difficult to make the general public understand that, although a freeway or loud motorcycles, trucks, etc., may be within a community's jurisdictional limits, that community cannot exercise any control over the noise generated by the same except to the extent that the State will allow them to do so.

Even those noises which are subject to community control—barking dogs, loud drums, the normal everyday activities occurring in a community which generate noise—are difficult to regulate. In the past, ordinances dealing with noise pollution have had to subsist on the legal theory that a public nuisance is being generated by a particular activity; however, the ability to use this theory has always been dependent upon the willingness of the public to testify in court as to the existence of a violation of an ordinance.

Recently, the League of California Cities has proposed in "Quiet Cities Report" that communities enact a model ordinance which contains decibel levels, the violation of which would be prima facie evidence that unwelcome noise exists. In order to use such a means of regulation, sophisticated equipment and the personnel necessary to operate that equipment is needed. Information which could be obtained from such equipment would provide a greater evidentiary base for enforcement of noise violations, thus strengthening the local community's enforcement of its noise ordinance.

The question becomes, then, what assistance can be rendered by the federal government which will greatly aid communities in their effort to become quieter cities?

First, and perhaps the most obvious, is that the federal government can make federal funds available for the purpose of sound regulation equipment and training of the personnel to operate the same.

Second, the federal government can impose stringent noise standards upon the manufacturers of automobiles, motorcycles, and other vehicles to make them quieter.

Third, since many of the highways which exist in the State of California are built with federal funds, the federal government could assist in reducing noise generated by these highways by requiring that the design of these highways incorporate noise reduction measures.

It is the fervent desire of the City of Walnut Creek to retain the rural atmosphere which has caused so many people to migrate there by keeping the noise which accompanies the 20th Century's technological advances to a minimum. These efforts have been frustrated to some extent because many noise polluters are not subject to our regulations.

It is hoped that the testimony which you receive today and in your hearings will result in legislation as well as technical and economic assistance to local governments which will enable them to combat at least one aspect of environmental pollution which they are closest to.

Dr. **MEYER**: Thank you very much.

Mr. Hildebrand?

Mr. **HILDEBRAND**: No questions.

Mr. **BARON**: Would this model code remove the clutter from the courts?

Mr. **SCHEIDIG**: No. The model code in the—the gentleman's point is well taken. It is basically a misdemeanor type of ordinance. Again on that one people say, "Well, you have a fine of $500 or six months." These are always built into your ordinances. However, of course, it's at the discretion of the court whether or not to impose such a fine or the penalty of the jail sentence. I doubt if it's very often done that they give the $500 maximum fine unless they are a continuous violator.

Mr. **BARON**: I raise this question because Dr. Geers said the courts, under criminal laws, that you have problems with no enforcement. And the problem is with the courts taking the complaint seriously. Wouldn't you have the same problem with the model code?

Mr. **SCHEIDIG**: I believe you would, but the difference we have here is there is no other means by which to work for controlling pollutants at the present time. If you did stablish—if there was a possibility of establishing a civil branch of the court, then we would welcome that and have one department that is particularly civil for this particular area.

Mr. **Baron**: This is what we are trying to do in New York City, for example.

Mr. **Scheidig**: Right now we are hampered by the present set-up of the court system.

Mr. **Baron**: One other thing. Would you say that one of the things the federal government could do is help localities to evolve possibly a—a modus operandi that would overcome some of these difficulties in enforcement and perhaps finally if somebody does get a citation—

Mr. **Scheidig**: I think there could be great cooperation between the city, federal and local communities of disposing of these by an effective means.

Mr. **Baron**: You say "effective means"?

Mr. **Scheidig**: Effective means.

Mr. **Baron**: Of getting enforcement?

Dr. **Meyer**: This is an area of developing suggested model codes and laws that we are going to have to look into. I will make it a point to put some of our staff who are concerned with this already even in advance of legislation to take a look at the civil suit provisions as well as the other provisions.

Mr. **Martin**: Just one quick question, since you are a—representing a local community and I am kind of curious. It's true that the California requirements prevent you from doing anything in so far as the motor vehicles are concerned in regulation. However, they don't prevent you in setting your own speed laws in your community?

Mr. **Scheidig**: That's correct.

Mr. **Martin**: There are ways of quieting noise by making the—by changing the speed laws on the vehicles which I am not for because I am against creeping along and things of this nature. I wouldn't say that. There are other things you can cite in your own local ordinances to set a high fine if anyone removed a muffler on a motorcycle. That isn't setting a level. It's just making a change to the vehicle a crime.

Mr. **Scheidig**: We are not saying that there's nothing that the local government can't do. Don't get me wrong on that. However, even if you try and set speed limits—The speed limits, for example, in the City of Walnut Creek, our highest is 45 miles an hour. Most of your speed limits are 35 to 25. Nobody is going to drive slower than 25 miles an hour in a community. You can try and regulate it, but they are not going to do it. True, you could try and do it this way.

Also, if you can catch the muffler violater, there is no question about it. But what we are concerned about is not the person who takes his motorcycle and—Well, we are concerned about it, but the guy who has just a regular motorcycle and he's sitting at the intersection—and/or an automobile, and he thinks it's really a lot of fun to jazz up the engine and then go with it, which would be a violation of the Vehicle Code in another respect, the speed limit. But you probably couldn't regulate this with respect to just the muffler noise on that particular aspect. And we are also concerned about not only automobiles, but also just the general community noises, if you have a barking dog or a rock band playing in somebody's backyard. The neighbors will say it's bothering us or one neighbor will say it's bothering us, but if you are going to use a public nuisance theory, you are going to have to have more testimony than just one individual.

If, on the other hand, you have a mobile unit which has a sophisticated equipment whereby if you have an area affected, he can be called into it. You can register the noise much like the electronic devices being used in Massachusetts. And then you have a record of exactly what noise was being made and then you have an objective standard. Otherwise, it's purely subjective and the possibility of obtaining a conviction or a successful prosecution is rather minimal.

Mr. **MARTIN**: What I am alluding to is the idea of pre-emption which is that each local community feels they shouldn't be pre-empted. And that—Let me ask you a question, specific question.

On a new vehicle, the noise regulations for a new vehicle, would you say the local community should not be pre-empted by the federal government in setting just a single noise level on a new vehicle? The operational aspects and how you control it in your local communities could be different. But on, say, a certification, for the sake of another word, of a new vehilce, should there be more than one body with the authority to do this?

Mr. **SCHEIDIG**: No. I think on the certification of a new vehicle, you should have a single body which can be the federal government. The freeways going through your communities obviously, if they are an interstate freeway, they are going to be under federal regulations. What we are trying to look for is greater cooperation in submitting design plans, say, for a community or a freeway that's going to go through your community so you can—Well, how about the possibility of putting baffles on the elevated sections of the freeway? There should be a greater sense of cooperation.

I think we have the situation where we have been working in a vacuum with each other, and, again, our point is that we should work with the local people, which is closest to the citizens. They look to us first to a solution of the problem in the sense of a phone call. And when you say you can't do anything about it, there is a great deal of frustration that exists at the local level.

Mr. **BARON**: Do you have any concern that a federal level—somebody used the word referring to the state level of too liberal—for your type of community that might be exposed to excessive noise? If a standard, a national standard, is set?

Mr. **SCHEIDIG**: I recognize the fact that if you have a national standard, of course, it will apply everywhere. But you are going to have to start somewhere. I would rather see the federal government—the community of Walnut Creek go right to the federal government and have them put in a standard of some sort, hopefully one which is very—fairly stringent or not overly so, so you have something which will allow us a little bit of flexibility in the application of our own laws to that particular noise. If we use ambient levels, if the person has a motorcycle which maybe meets the federal standards when it was designed but he will alter it to where it becomes excessively noisy or if he races the motor at a stoplight, then let us try and control them there.

Dr. **MEYER**: Well, thank you very much, sir.

We would now like to ask Mr. Michael Berger, an attorney from Los Angeles, if he's here, if he would come forward. Mr. Berger, glad to see you, sir.

STATEMENT OF MICHAEL BERGER, ATTORNEY, LOS ANGELES

Mr. **MICHAEL BERGER**: Mr. Chairman, gentlemen:

I am a Los Angeles attorney associated with the firm of Fadem and Tanner, and spend most of my time representing property owners in eminent domain litigation, including jet noise litigation.

I would like to say for the record that I sure wish we were making the kind of money off these airport cases that other people think we are. It would make life a lot easier.

Dr. **MEYER**: Very well, sir. That's duly noted in the record.

Mr. **BERGER**: Thank you.

I notice there's been some discussion this afternoon, some questioning from the panel, about issues of pre-emption and the kind of relationships among the governmental entities in controlling noises, and this is basically what I would like to focus on this afternoon in the time that I have got here, because I feel that there is legislation already on the books which can go a long way towards controlling airport noise.

The problem is in the application and administration of that legislation by the FAA. The thrust of my testimony is that while the FAA has the power to act positively to alleviate much of the aircraft noise problem, it has instead engaged in a massive program of non-action. And those actions which the FAA has taken have been antithetical to the goal of noise abatement.

Our starting point must be 49 U.S.C., Section 1431, where Congress gave the FAA the power to establish noise certification standards for jet aircraft in order "to afford present and future relief and protection to the public for unnecessary aircraft noise. . ."

The statute is clear. The FAA's reaction to it has been downright schizophrenic. For, the FAA claims—at one and the same time—that it has no power to control aircraft noise and that it has so much power that it has pre-empted the field.

Let me illustrate. The stock FAA explanation for the failure of its noise standard to prescribe a livable level of noise goes something like this:

> "It should be emphasized that nothing in this amendment is intended to substitute Federal judgment for that of the airport proprieter in the determination of the noise levels, noise measurement or noise evaluation techniques that are most responsive to the particular and unique problems facing each airport proprieter."

In other words, the FAA's view of its role is to set a standard—presumably, *any* standard. Then it is up to the local authorities to so adjust their land use patterns that noise created under the FAA's standard will not create any damage.

If that sounds fanciful, consider the recent statement by an FAA attorney:

> "Thus the distinction between federal definition of source of noise reduction limits and non-federal definition of airport

noise compatibility requirements is consistently preserved in Part 36. . . . While the aircraft is found to conform to standards that are as restrictive as technology allows, such 'approval' is neither a statement, nor a prediction, that a given community/runway situation is or should be compatible with operation of that aircraft."

But, remembering the FAA's statutory command, "to afford present and future relief and protection to the public from unnecessary aircraft noise," the FAA's position sounds a bit hollow. In spite of its clear mandate, it insists that only local airport operators can make noise abatement effective. As the FAA has noted on many occasions, "in order to make their airports fit the particular needs of their locales . . .",

> "Airport owners acting as proprietors can presently deny the use of their airports to aircraft on the basis of noise considerations so long as such exclusion is non-discriminatory."

So, in order to solve the noise problem, all an airport operator need do is ban jets, or limit jets, or put a curfew on jets. And according to the FAA, he has the authority to do any of these. Well, almost.

You see, when the federal government (through the FAA) grants funds to local airport operators, it enters into contracts with them called grant agreements. And in these grant agreements the FAA routinely takes away by contract the power to deny the use of an airport to noisy aircraft.

For example, in San Diego, California, the Board of Airport Commissioners wanted to impose a curfew in order to cut down on the nuisance inflicted on the neighboring property owners. Immediately upon publication of the Commissioners' request, the Federal Aviation Administration informed them that any such restrictions would violate their commitments under their Federal Air to Airports grant agreements which required them to operate the airport without restriction to hours. After many discussions with FAA officials, it was determined that the proposed regulation should not be implemented.

The municipal airport at Santa Monica, California, caters only to general aviation, has literally no buffer between it and the surrounding residences and, when the executive jets operate, is probably the noisiest airport in the world. Nearby homes are subjected to noise ranging higher than 120PNdB. In addition, the airport is probably not the most economical use for the city to make of the property and the city fathers have recently considered shutting it down. Before they could so much as pass a resolution, the FAA stepped into the act:

> "We have been informed that the City of Santa Monica is considering alternative uses of the property presently used for the Santa Monica Airport. I respectfully suggest, at the outset, that retention of the Santa Monica Airport in our transportation system requires consideration of many factors other than direct economic returns, not the least of which is the fact that air transportation in Southern California is highly dependent upon the continued operation by multiple municipalities of all the existing airports serving our complex community.

This is as true for Santa Monica as it is for the continued operation of Los Angeles International Airport.

* * *

"The Federal Aviation Administration has no intention of consenting to the use of this property for other than airport purposes and will insist on the City of Santa Monica complying with its contractual obligations to the Government. To do otherwise would seriously impair the national air transportation system and particularly would be detrimental to the residents of all of Southern California who are dependent in one way or another upon air transportation."

So the FAA strictly enforces its contracts with local airport operators. In fact, so strongly that all of the local control and responsibility that the FAA is fond of exhibiting turns out to be highly ephemeral.

But that may not be all bad. Perhaps this cloud has a silver lining. There are requirements in those grant agreements—requirements put there by statute—that airport operators must consider their neighbors:

> "No projects shall be approved by the administrator unless he is satisfied that fair consideration has been given to the interest of communities in or near which such project may be located."
>
> "As a condition precedent to his approval of a project under this chapter, the Administrator shall receive assurances in writing, satisfactory to him, that—
>
> "* * *
>
> "(4) appropriate action, including the adoption of zoning laws, has been or will be taken, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the airport or activities and purposes compatible with normal airport operations including landing and take-off of aircraft."

Surely, if the FAA is strictly enforcing its contracts, strict enforcement of these provisions will bring some measure of relief to suffering thousands. Unfortunately, there is nothing to lead us to believe that the FAA has given any thought to these provisions.

We seem to have come full circle. The FAA says it has little power, that the operators must act in order to have any relief from noise pollution. Yet when the operators attempt to act, the FAA throws in a veto, exercising power whose existence it denies.

The FAA's appearance in court in suits related to noise abatement is fascinating. Remember the FAA's plaint in enacting certification standards? The FAA did not have sufficient authority to solve the jet noise problem; it needed help from local authorities, because Congress did not intend for the federal government to substitute its wisdom for that of the people most concerned.

In court, however, the FAA has firmly held to the position that Congress pre-empted the field for the FAA to coordinate. This posture does not aid in abating aircraft noise; it ensures its perpetuation.

Perhaps the FAA's position was best summed up in the amicus curiae brief it filed in Lockheed Air Terminal, Inc. v. City of Burbank. In that case, the City of Burbank, California, in order to protect its citizens from the increasing noise hazard being created by the Hollywood-Burbank Airport, enacted a curfew from 11:00 p.m. to 7:00 a.m. The FAA appeared as a friend of those people opposing the ordinance. Relying on the Federal Aviation Act of 1958, the 1968 Amendment to that Act (which authorized the FAA to set noise levels for certification), the regulations which the FAA has made, and the Airport and Airway Development Act of 1970, the FAA concluded that, "The Federal Scheme is comprehensive and Pervasive," and that the entire field has been "Pre-empted by Congress."

To be sure, the FAA found one minor chink in the pre-emption picture: The airport operator—as operator—may make certain regulations. (Of course, as discussed above, this is apparently only a theoretical chink, as the FAA vigorously fights any such attempts). But the FAA apparently doesn't even like this theoretical diminution of its authority (contrary to its public statements discussed earlier).

The California Court of Appeal recently decided the case of Stagg v. Municipal Court. In that case, taking the FAA at its word, the court held that Santa Monica, as owner and operator of the airport, could impose a curfew on jet flights. The FAA has apparently had a recent change of heart. In the Burbank Airport case, it told the court that:

> "The important 1968 Amendment to the Federal Aviation Act appears not to have been considered by the Court which upheld a jet curfew at the Santa Monica Municipal Airport. . . . The Stagg case was commenced in January 1968 before the amendment was enacted, and although the appellate decision was rendered after the amendment became law, perhaps the failure to consider the amendment was a consequence of the fact that there was no appearance in the appellate court by the party challenging the curfew. Moreover, the Court is Stagg had no opportunity to consider the further pre-emption resulting from the 1970 Airport and Airway Development Act."

There are several important points to be derived:

First. While the Stagg opinion does not refer to the 1968 amendment, that legislation was considered. In fact, it was brought to the court's attention by the airport operator.

Second. The FAA now feels that *no one* but the FAA may regulate in the field of aircraft noise.

Third. The FAA is playing unfortunate games with the public interest: either it has all pervasive power—as it represented to the court in the Burbank airport case—or it has limited power—as it represented to the public when issuing noise standards for certification. It cannot have things both ways. The FAA's schizoid stand serves no one but the airline industry.

The FAA has taken the same position in attacking local ordinances regulating the permissible level of noise. The best-known case is American Airlines v. Town of Hempstead, where the FAA intervened and convinced the District Court that it had preempted the field. The Court of Appeals affirmed the injunction against the ordinance without reaching the pre-emption issue.

The latest chapter is a lawsuit filed by the FAA (previously it had merely intervened or appeared as amicus curiae in suits filed by others) against the City of Inglewood. Inglewood's ordinance limits aircraft noise to 90db, but exempts aircraft which are in emergency situations or which are operating in conformity with federal laws or regulations. The FAA, in seeking to enjoin enforcement of the ordinance, takes the position that only the FAA is competent to interpret and apply federal laws and regulations.

Finally, the FAA has bent its most inventive efforts at interpreting the proper venue for suits by people who feel that the Administrator has failed in his duties to protect them. In Alfonso v. Hillsborough County Aviation Auth., the FAA successfully moved to quash service of summons on the ground that the suit was brought in Florida, and service on the Administrator in Washington, D.C., was thus ineffective. In Town of East Haven v. Eastern Airlines, Inc., the FAA successfully moved to dismiss on behalf of the Administrator on the same ground. However, in Brand v. Shaffer, the plaintiffs finally learned their lesson. Although the problem concerned an airport in Massachusetts, suit was brought in the District of Columbia so that the court would have jurisdiction over the Administrator. The FAA, however, then successfully moved to change venue to Massachusetts! Once again, it would appear that the FAA is far too interested in taking action designed to hamper a resolution of the jet noise problem. Perhaps some of this effort could be better utilized. As one court caustically noted:

> "Although the Court's hands are tied as far as providing the relief here demanded against the Administrator, the Court would be derelict if it failed to comment on the conduct of the Administrator during the pendency of this action. If plaintiffs' claims were not known to the Administrator prior to the institution of this suit, they surely have been made known to him by now, at least in a general way. Yet the Administrator has refused to extend an invitation to these people to sit down with him so that he may hear them out. The Administrator is charged with serving the 'public interest.' The people who live near expanding airports in this jet age are no less a part of the public than those who fly in the planes. The Court expresses no opinion as to the merits of plaintiffs' claims; but it does believe it is within the Court's competence to comment on the Administrator's apparent desire to avoid the issue rather than to take the initiative and meet it head on."

Without minimizing the importance of air transport, those who fly must not be permitted to do so at the expense of those who live, work or own property near airports. There are mitigations that can be accomplished by changed methods of operation. In some cases they involve penalties. But those are minor compared to what will happen if every effort is not made by manufacturer, operator and airport. The air travel industry will have its development drastically curtailed if it does not produce every bit of relief possible.

Government at the administrative level has abdicated. There has been no step taken by the federal government that has provided one decibel of relief. The new regulations will not bring relief, if at all, for a decade. If one wants to see the epitomization of stalling, buck-passing and bureaucratic obeissance of regulators to those they are supposed to regulate, here is a case in point.

Our system of government provides checks and balances which have slowly begun to work. The demise of the SST, of the fourth New York airport, and of the Everglades airport are examples. But this "win a battle—lose a battle" technique results in a spotty program. If the FAA doesn't face up to reality, it will not even be serving the airlines well.

Dr. **MEYER**: Mr. Berger, you have raised again the same sort of issues that have been plaguing people concerned with this airplane noise problem, namely, who really has the responsibility, authority, and accountability. It's a concise summarization of the problem.

I feel, the fairness to the FAA, I am going to be compelled to send a copy of this testimony to Mr. Schaeffer and ask him to, for the record, give us their views, which will place in the public view even more succinctly these two positions and may serve the public interest.

Mr. **BERGER**: Sounds like an excellent idea.

Dr. **MEYER**: Panel, any questions?

Mr. **HILDEBRAND**: I have one.

In your expertise in the area of the body of legal precedents that are building, or not building up, do you see any trends? Do you see the FAA being more responsive or less responsive or more sophisticated in their approaches, or are our cities becoming more sophisticated?

Mr. **BERGER**: Frankly, it seems to me that the FAA is becoming more active in opposing anything which smacks of noise abatement and looks like it's going to help the public out. The FAA started some years in—in the New York area cases where Hemstead and Cedarhurst appeared as amicus curiae in suits brought by other people.

As you mentioned at the end, the FAA has now started to try suits actively on its own. It's brought one against the City of Inglewood to keep the City of Inglewood from enforcing an anti-noise ordinance which was merely adopted by federal standards and it said that any airport that violated federal standards was going to be subjected to federal fine. And they didn't like it, so they brought suit in that respect. And it seems to me that they are working overtime to keep anything from happening which is going to solve this problem.

There is an awful lot of talent and effort being used by the FAA. I would suggest it's being used wrongly.

Mr. **HILDEBRAND**: And are the courts—Do you see any trends in the courts? Are they behaving differently? I mean just by the fact that the FAA enters into a case, does not mean that the city will lose.

Mr. **BERGER**: That's certainly true. All I was mentioning at that point was that there's a governmental agency which has been given the responsibility for handling these matters. And I think it's handling them wrongly. Court decisions are interesting. They seem to be across the board.

I have a difficult time in saying that there is any clear-cut trend coming in from the court decisions. There aren't that many of them at the appellate level, which is one problem, as you are aware. There are a number of excellent decisions which have been rendered in the Los Angeles Superior Court by Judge Bernard Jefferson who has written hundred-page opinions dealing with terribly complex aspects of the airport noise problem from a legal perspective. These are not published opinions since they are at the trial court level, and one can only hope that when they reach the appeals level, the appellate courts will have the good sense to adopt much of his reasoning.

Mr. BARON: I just want to compliment you for your succinct presentation of the interesting portrayal of the FAA, which the FAA will, of course, have a chance to rebut. But I think that to portray it with homework and the clarity that you did makes it a little bit easier to try to get to grips with the problem.

Mr. MARTIN: I would like to just make a comment. I don't think you have given the FAA their due justice.

Mr. BERGER: I don't either.

Mr. MARTIN: Anyway, one thing that I wanted to say in the case of—in the Inglewood case, for example, where the FAA is opposed. The FAA has not set noise standards as such for use of aircraft and airspace. They have set certification standards which —just as the DBN people can tell you, certifying an aircraft to those standards is an art in and of itself. For a local community to try to pick up those kinds of levels and use them as an enforcement tool is, I would say, difficult at the least. So you really don't have this, and what the FAA is fighting is their right of the airspace situation. They really don't care if the airport operates—and I am talking about people in Washington. There are certain distinct people in the FAA who have different opinions. Word regulates certain things coming off airplanes. I think you have to give them in this respect their due justice.

Mr. BERGER: I am perfectly willing to give them their due justice. I feel, however, that there are areas that they are acting in and they are large areas which are completely antithetical to the goals that they are supposed to be pursuing. And I think that one of the problems is that the FAA was the agency that was given the responsibility for setting noise standards and for applying them. I think that the FAA has got a patent conflict of interest that it's supposed to protect people from noise on the one hand and to encourage the aviation industry on the other. And it's a very difficult thing for the FAA to manage to juggle both of these things at the same time.

Part of the problem was Congress giving them that authority. But it's my feeling in looking at it that they have weighed very heavily in the balance of the industry's side and paid little attention to the other side.

Dr. MEYER: Well, thank you very much. One of the roles of the Environmental Protection Agency, of course, is to step into this picture and to help bring to the fore the peoples interest as well as the land-use interests and all of the requirements of a complex society.

As I said, I know the FAA has tried to do some things and is spending a fair amount of money. I do feel, as I said, that the public good will be served by submitting your testimony. And I am not saying that critically of your testimony.

My purpose is to adduce the truth and listen to the views of all concerned. I think you have made a notable contribution, sir.

Mr. **Berger**: Thank you. I think that it would be the best thing in the world to get everything out in the open and to the public, which is my basic point in coming here, was to get issues aired which normally get buried in the dusty court files and nobody ever knows about them.

Dr. **Meyer**: I appreciate your doing so very much.

Is Ione Giffen Maxwell here?

Mrs. **Ione Maxwell**: Yes, she is.

Dr. **Meyer**: We are happy to have you here. You are from Point Richmond, California?

STATEMENT OF IONE MAXWELL, POINT RICHMOND

Mrs. **Maxwell**: Yes.

Good afternoon, gentlemen. My name is Ione Giffen Maxwell. I live at 50 Western Drive, Point Richmond, which is a small community near the San Rafael Bridge, and I represent only myself.

Since July 22nd I have been on medical disability leave from a large federal-funded research laboratory.

The disability is caused primarily by noise—specifically low frequency infranoise.

I have been with this laboratory for over 18 years in the capacity of scientific glassblower—fabricating complex custom-built glass apparatus.

One of the many joys of this art is that, on the whole, it is a *quiet* one. There just simply is not a great deal of noise involved in soft flames and sagging glass.

Lest my statements thus far seem paradoxical, let me point out here that the sources of the noise to which I was subjected are in the *surrounding* areas of the building I worked in—namely huge rotating motors, generators, boilers, ventilators, positive displacement blowers, air conditioners, ducts, compressors—to name a few.

The building itself is constructed of corrugated metal—a poor choice I think, to house the welding, sheet metal and machine shops as well.

Imagine, if you can, ten heavy duty motors rigidly mounted to the outside of your house—five of these operating 24 hours a day and the others going on and off at unexpected intervals. Sometimes they're *all* on at the same time.

When I walked into this new shop for the first time eight years ago, I was appalled at the rumbling, roaring noise. But I thought that I had to accept it as a condition of employment and that I would "get used to it."

I never did.

I know now that I never could, because: 1. The effects are cumulative; and, 2. My body will continually react with its defense mechanism whether I like it or not.

For about six years I wore ear plugs eight hours a day. And if you have ever worn ear plugs for an hour or so you know how uncomfortable they can be.

I tried ear muffs. But they only amplified the low frequency noise and made it impossible to wear the special glasses required for working glass.

I noticed, too, that glass rods kept in a jar on my bench vibrated in constant, varying, erratic motion and strange patterns appeared on the surface of a bottle of mercury—as though it were being squeezed.

About three years ago I began a concerted effort to correct these conditions.

Decibel meters were brought in, and the conclusion was made that since the noise level was under 85 decibels, it was to be considered a *nuisance* and not a *health* hazard and that no corrective action could be taken.

The logarithmic progression of the decibel scale is a mischief-maker for the lay person. Only yesterday I learned that the sound of human breathing is 10 decibels, while an artillery blast, which is one thousand trillion times greater, is 150 decibels. And that an 86 decibel reading is *double* the intensity of 80 decibels.

Two years later, at my insistence, another study was made and this time the conclusion was "if the present noise levels seem reasonable, then personal factors should be evaluated." Which I translated to mean—"This cat is some kind of *nut*!"

I had a rotten feeling all along that the decibel meters were not measuring whatever it was that I found so terribly disturbing, but apparently there were no other measuring devices, so I went back to the ear plugs. This time a size larger.

I know now that decibels do not take into account the tone or frequency of sound waves.

A couple of months later I began to sustain considerable bruising, because I was losing my balance and running into things and falling down a lot.

My head rang. My ears would fill up and pop as though I were constantly undergoing an altitude change.

When reading a drawing, two lines of print would appear.

My depth perception was fouled up and I began to drop things —which in my business can be shattering.

I found it impossible to think or concentrate. Or to escape.

The most insignificant scratch or burn would flare into blood poisoning.

I was in a constant state of tension. And I was *bone weary*. I guess that's the worst part—being so utterly, completely exhausted and not knowing why.

So I went to the medical director of the lab. Twice. After a cursory, fragmented conversation, his conclusion was that there were probably other personal problems involved and that it was "all in my head." Or perhaps I had been drinking.

In the face of the evidence presented by the experts, and since I do not drink, I began a search into "what in the hell is wrong with my head?"

It was while investigating a possible endocrine dysfunction—in a medical library—that I ran upon my first clue about low frequency sound and the damage it inflicts upon an organism by triggering the defense mechanism.

Unfortunately, the article was written in Russian.

A month later, Dr. Procunier's study of "Infra Sound" came to my attention. So now I had a *name* for it.

But nowhere could I find it described in the literature.

The fact is that the literature is practically non-existent. At least in the United States.

The studies I *did* find were from Russia, Germany, Argentina, Australia, Great Britain, Canada, and Denmark.

A team of French physicists accidentally ran onto the phenomenon of infrasound and published their findings in the British *Science Journal* of January 1968.

This described my findings exactly! Even to the erratic behavior of the surface of a liquid that I had noticed in the mercury bottle.

Unhappily, one of the investigators was made an invalid for life by exposure to intense low frequency sound.

Another more recent Russian study revealed that a five-minute exposure to intense infrasound changes the protein structure of an egg, which causes the egg to spoil faster.

By now I was beginning to feel reassured that this problem was really not all in my head. Unless, of course, I was an egghead. And a rotten one, to boot.

Other findings showed that infrasound can trigger epileptic seizures; cause allergies and nervous breakdowns. That it releases adrenalin into the blood stream, lowers critical hormone levels; it drops the blood sugar level from 109 to 35 milligrams percent.

It causes drastic changes in the endocrine system and the central nervous system. It causes fatigue, tension and anxiety.

And Lord knows what else.

I made these findings available to the appropriate laboratory personnel who decided that nothing could be done short of tearing down the whole building.

I thought this would be a splendid idea.

Finally, I went again to my private medical doctor who earlier had discovered and treated inner ear damage. And it was he who noted the continuing deterioration of my health to such a life threatening degree that he suggested a prolonged medical leave.

Meanwhile, in the search for quietude, I bought a house right on the water of this fantastically beautiful San Francisco Bay—away from the city and traffic noises.

So now at night—*after* the hillclimbing motorcyclists have gone; *after* the new police helicopters have been padded down, and *before* the swarms of jets start out over the Pacific—I throw open my windows to hear the gentle lapping of the water.

Often as not, however, I hear instead the rumbling, roaring, pumping, pulsating concussive crashing of the infranoise from the Standard Oil Refinery located over the hill in back of me.

Nothing stops it.

It comes through the well-insulated walls of my bedroom; through the pillows over my head; through my skull; through my very bones.

How dare they dump their obscene acoustical garbage into my pretty little house!

Dear God, where do I go from here?

Dr. **MEYER**: Well I'm afraid I can't answer your last question. But I must say it's a very illuminating presentation.

One of the chores that our Agency has been doing has been conducting a rather extensive review of the foreign literature as to what's going on in research and development, and not only in the Western world, but in the other nations. And in our report to Congress, there will be a rather extensive discussion of all this material, and there are some references to this phenomenon that you mentioned therein.

It points up the fact that there are certain areas which we didn't really have adequate knowledge as to the complete effects of this energy transfer. And that's what we are dealing with.

Most people have to realize that noise is sound. It's unwanted sound. It's acoustical energy and certainly is one that goes through the entire spectrum if one gets down to that—what's called infrasound. But it is actually vibrations.

So you are citing some specific problems which certain individuals probably have a greater sensitivity to than others. It is an area of great concern to define more precisely all of these kinds of effects.

Panel, any questions?

Dr. DIETRICH: I think I would like to ask this witness a question which she may take as a nasty question, but I don't mean it that way.

When you were working at your glassblowing, scientific glassblowing, were there other glassblowers or other workers in the same building or near your work station?

Mrs. MAXWELL: Yes.

Dr. DIETRICH: I ask you that because one nasty thing—conclusion that some people draw from that is, "See, they are not complaining about this."

But the point I think that this witness makes so clearly is she's complaining about it and she's a human being and she shouldn't have to suffer just because her own body is more sensitive perhaps than others to this particular pollutant. I have an—an obvious problem that I am more sensitive to sunlight, let's say, than others. Different skin characterics. And I think the public is usually willing to see that and understand that. And it really bothers me that people will not take that same understanding point of view toward noise and vibration sensitivity.

So I am very glad to have this witness's testimony.

Dr. MEYER: Yes, I am, too.

Mrs. MAXWELL: May I make a comment regarding that, and I appreciate your remarks about sensitivity. I realize that some of us may, indeed, be more sensitive than others. I don't want to speak for my co-workers. I don't feel capable of doing that. However, I would suggest that when a faulty compressor causes contraction in a concrete floor, that it doesn't take a hell of a lot of sensitivity to pick that up.

On the other hand—

Dr. DIETRICH: Thank you for the observation. It may very well be that your co-workers are being unduly patient with the amount of noise and vibrations around them. And I am, incidentally, also impressed—or maybe I should say unimpressed—with the efforts made to measure this as you described it and put some numbers on the amount of the low frequency sound and vibration that apparently exists in the work space where you were working.

Mrs. MAXWELL: Are there instruments now to measure this?

Dr. DIETRICH: Yes. I am afraid that I would have two questions on behalf of the acoustical community that they not only exist now, but have for some time.

Mrs. MAXWELL: I was not able to get any answers from any of the—the professors at the Campus of the University of California who, I thought, knew anything about this or anything about the measuring devices.

Dr. DIETRICH: Well, low frequency sound measurements have been certainly within the state of the art for several decades. And certainly vibration measurements are well known and anything that's producing such structural damage that you are talking about doesn't sound like it presents a state-of-the-art problem.

Mrs. MAXWELL: I am encouraged.

Dr. MEYER: Are there any other questions?

Mr. BARON: In London the British Scientific Advisor not only measures noise for the City of London, but also vibrations. And I think that the EPA should be concerned with the business of going below the traditional 40 or 35 that we find—

Dr. MEYER: 37.5.

Mr. BARON:—on the frequency analysis and the sound meters. We have sound in the—noise, sound without value, I believe there's reference to infrasound in the federal publications so that we do have to expand not only infrasound—

Dr. MEYER: But ultrasound also, the higher frequencies.

Dr. DIETRICH: Because—This is really a comment. But it might be of interest to this witness because this is a hearing on regulations and its effects. There was mention made that there's a Connecticut court case which has to do with a housewife in Connecticut who is sensitive to very high frequencies. It may have been the noise associated with the horizontal oscillator of a flyback transformer of the television set.

Mrs. MAXWELL: Was the set working properly?

Dr. DIETRICH: That's one of those mysterious things that the court didn't unravel for us.

Mrs. MAXWELL: Because I have also been able to detect faulty high-frequency equipment. And if I may add just one more thing, so much of the discussion on noise has to do about hearing and I did want particularly to point out the drastic effects it has on the rest of the anatomy and, if I have succeeded in that, it's been worth my day. And thank you very much.

Dr. MEYER: Thank you, ma'am, very, very much. Appreciate your testimony.

I would now like to ask if Dr. Michael Hogan is here? Dr. Hogan, you have the floor.

STATEMENT OF DR. C. M. HOGAN

Dr. C. MICHAEL HOGAN: The need for reduction of intrusive community noise in this nation's cities is transparent. Annoyance, speech interference, and sleep intrusion by noise are a way of life for urban dwellers. Motor vehicles inflict the greatest dosage of noise, although in certain areas the dominant source may be aircraft, construction activity or a variety of other things.

I shall call attention to methods by which motor vehicle noise can be effectively reduced in the urban environment. The desirability of reduction of vehicular noise at the source is obvious. Noise standards to be met at the time of sale of new vehicles as well as operating standards for vehicles on the road will be valuable in abating urban noise; however, resources allocated to noise abatement particularly at the regional and local level can generally be expended more efficiently on abatement measures not specifically associated with the vehicle hardware.

Some examples of abating motor vehicle noise in planning, design, operations and maintenance activities are now summarized (see Table 1).

TABLE 1. Summary of Selected Roadway Noise Abatement Techniques

Project Name	Location	Abatement Technique	Approximate Abatement (dBA)
Design of urban interstate highway	I-66 in Arlington County, Virginia	Employ earth berms along roadway	12
Modify traffic operations on existing urban expressway	Foothill Expressway in Santa Clara County, California	Use speed control, traffic signal timing, and alter surface maintenance procedure	7
Location and design of urban bridge ramps	I-266 in Washington D.C.	Select ramp locattion, height and concrete wall siding consistent with existing land use patterns	10
Bus stop location	San Francisco, California	Locate bus stops such that urban street canyon noise propogation minimizes the noise intensity in nearby residential areas	10
Land use planning for development near existing urban highway	Alameda County, California	Plan land usages consistent with expected noise levels. Modify architectural design to realize noise abatement	7

In the first example, community noise impact was evaluated for alternate highway designs. In this way the noise abatement value of a particular design can be traded off with other engineering goals as well as cost. Noise abatement is most economical when it is designed into a project rather than added as a remedial measure. In this highway project, locations of acute noise impact were identified and a series of earth berms designed for abatement; this solution is attractive whenever sufficient right-of-way is available and the local topography and microclimate are compatible with a simple blockage of sound rays.

The second example illustrates how noise abatement can be conducted even for an existing expressway. The most effective techniques for Foothill Expressway requiring minimal capital outlay were control of vehicle speeds, the interrelated control of traffic signal timing and the choice of a surface maintenance procedure. A computer program capable of predicting community noise levels from a roadway of arbitrary design and operating characteristics was used in this project to sift through a large number of noise abatement strategies and arrive at a satisfactory combination of the controllable parameters. Figure 1 shows example sound level predictions near a roadway.

For Interstate I-266 Potomac's river crossing alternate ramp locations and designs were examined to provide noise minimization consistent with critical land usage along the Georgetown Waterfront. As in the previous example, the ability to predict noise abatement values in the design stage allows one to select bridge and ramp designs which are instrumental in community noise abatement. The local terrain and microclimate exert a strong influence upon sound propagation. The use of a computer model for roadway noise prediction allows these features to be incorporated in the analysis.

The propagation of sound through urban street canyons allows sound to reflect and reinforce such that the intensity for sound propagating down a canyon may be considerably higher than in the absence of urban structures; however, those same structures can be useful in blocking the transmission of sound particularly when the residential receptor areas of interest do not lie on the most heavily trafficked streets. An analysis was made of certain San Francisco bus stop locations which showed the present geometry virtually insures maximum transmission of bus noise into residential neighborhoods up to many blocks away from the source. Alternate stop locations were recommended which would reduce peak bus noise to those neighborhoods by more than 10 decibels.

Land use planning and architectural design can influence noise levels for the inhabitants of most urban development projects. A candidate site should be evaluated for the intended land usage based upon sound levels which can be expected in the completed development. Often several alternate land use plans will be evaluated, noise impact being one criterion. After a basic usage plan is adopted acoustical landscape and architectural design may be undertaken. There the location, height and facing of buildings will have noise impact consequences. Correspondingly the position of building pads relative to surrounding terrain, the use of earth terraces, and the choice of plantings can all be determined to reduce noise dosages.

In summary, virtually all decisions regarding urban transportation system design as well as other urban development decisions have an impact upon noise levels which the population receives. It

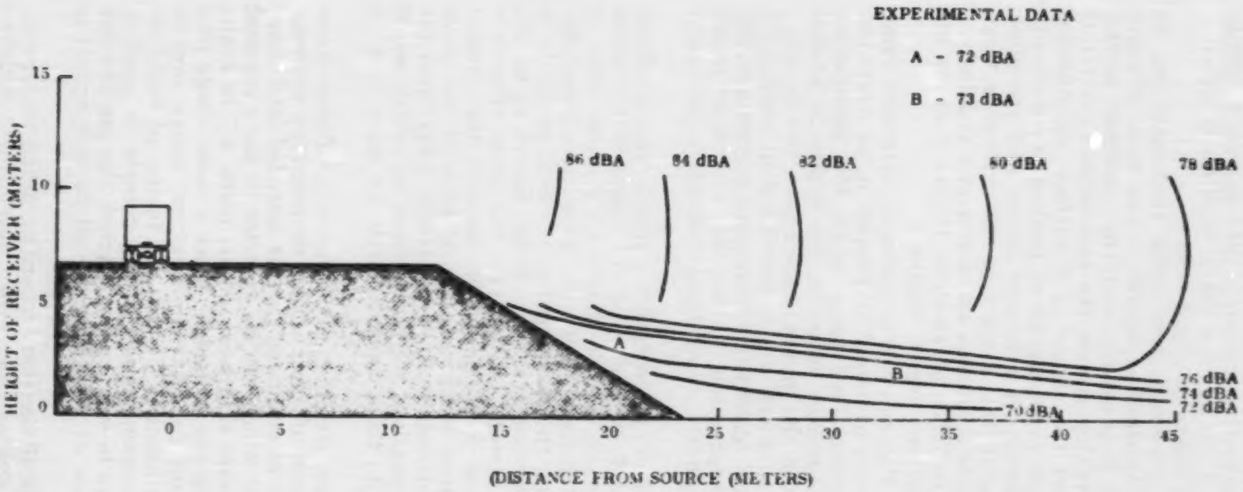


Figure 1. Sound Level Contour Map Near an Elevated Highway

is time that public and private agencies which make such decisions acknowledge their responsibility for controlling urban noise.

Thank you.

Dr. **MEYER**: Thank you for a very concise statement of an approach to problems which is certainly of a practical nature.

Panel?

Mr. **MARTIN**: This is just a question. I am not familiar with your firm. But just for my own edification, what is this? What do you specialize in as far as your expertise, because I am very interested in the subject that you presented.

Dr. **HOGAN**: The Environmental Systems Laboratory is a group of ESL, Inc., and this small laboratory specializes in the air and noise pollution impact of transportation systems.

Mr. **BARON**: I have a question on earth berms. Isn't there a problem of shadow effect? Or when you say 12 dB, or whatever, reduction, I take it you are taking into consideration the fact that you may have noise transmitted beyond the first barrier?

Dr. **HOGAN**: As shown in the table, those were only approximate values for those locations in that particular study.

Your point is well taken that, depending upon the lay of the land in a particular area, and importantly upon the lapse rate that's prevailing, one may get entirely different effects from berms. In the thermal lapse rate, berms cause sound to burn down. The berm may be totally ineffective in abating any noise so that one has to take extreme care in making generalizations about the effectiveness of a berm or any type of noise barrier.

Mr. **BARON**: You are making two judgments in your paper apparently about what the level should be. But you are saying that it is possible to predict what they will be?

Dr. **HOGAN**: Yes.

Dr. **MEYER**: Go ahead, sir.

Dr. **DIETRICH**: Perhaps I might be adding a little clarification on that. You are talking about the problems of sound bending over barriers due to the microclimate. And I was just wanting to clarify that. You are not saying that you might not continue to get shielding close in, but that you wouldn't—Are you?

Dr. **HOGAN**: Well by close-in behind a barrier—

Dr. **DIETRICH**: That is several barriers—dimensions away and so on. You are not suggesting that the sound is going to wrap around the barrier, are you?

Dr. **HOGAN**: Well, not within several barrier dimensions. But close in to the barrier we ordinarily think of it as a many barrier dimensions. If I have a noise abatement wall even six feet high, I would like to get some kind of abatement out 30 to 50 feet beyond the barrier, 30 to a 100 feet, even. This is the zone that is liable to intrusion by refracted sound which bends down in lapse rate conditions which causes the sound to bend.

Dr. **DIETRICH**: Thank you.

Dr. **MEYER**: Questions on the right?

Thank you very much.

Incidentally, some of the witnesses had to leave. And at this point I will say that their statements, which we have here, will be incorporated in the record as submitted, even though not presented.

Mr. Hesselgrave? Mr. Hesselgrave, I understand you are representing yourself?

STATEMENT OF D. H. HESSELGRAVE

Mr. D. H. HESSELGRAVE: I am representing myself, yes.

Dr. MEYER: All right, sir. Fine.

Mr. HESSELGRAVE: I have about six minutes of discussion here that I would like to offer the panel by making about three 30-second comments.

Dr. MEYER: Citizens representing themselves are entitled to have their plea. Please have at it.

Mr. HESSELGRAVE: The first comment is that this discussion to follow is my own opinion. It is based, as far as I know, on fact, and I believe it is a fact that exists to the present date.

The second comment that I would like to make, there may be a couple of adverse comments directed to the FAA. I would like the panel and the FAA to know that I feel that they are very hard-working citizens, but they are like the angry mule at times. You have got to get their attention in order to get something done.

Dr. MEYER: That's a good story. You have to hit him over the head. I am familiar with that. That comes from my part of the world.

Go ahead, sir.

Mr. HESSELGRAVE: And the third comment that I would like to make is that Mrs. Maxwell's testimony that preceded mine, I believe, emphasizes very well the fact that every citizen differs in his reaction to noise. I believe that most of the panel is well aware of it, but medical studies have proved that people have amplifiers between their auditory organs and their actual sensing organs and the brain itself.

And the net result of this is that one person may be terribly troubled and the next person may not notice a thing. And because of this, I think it is very important that we judge—that we judge the index of noise on the more sensitive group of the citizenry rather than prescribing any apparent noise difficulty as being merely a peculiarity of a person. It is a peculiarity, certainly enough, but a number of us share that pecularity.

I come to speak to you today about commercial jet aircraft noise at a distance far from the airport. And I wish to discuss the problem of this noise over terrain lying 20 miles or more from the airport, outside the final approach area. I recognize the terribly severe problem of airport noise right at the terminal, but I consider that unique and outside the scope of this discussion.

Now, to define the problem, I am speaking as a resident of Menlo Park, a city located 20 miles from the San Francisco Airport, and lying directly under the flight vector from the Woodside Vortac to the Bay. In this position, Menlo Park observes all air traffic coming from the South, the West and the North. This includes all traffic in the busiest air corridor in the world—the Los Angeles—San Francisco route.

One would think that any city 20 miles from an airport should not be troubled by aircraft noise. If we assume an aircraft descent rate no greater than the slope of the interstate freeways—and that is five degrees maximum—a plane over Menlo Park should be at an altitude of over 9,000 feet.

Regretably that is not the way it works. Instead, these inbound aircraft are maintained at about 7,000 feet until they come in over the coast range. They are then cleared to descend to 4,000 feet, and this is before arriving over Menlo Park. If they are under command from a ground control point, they will maintain this 4,000 foot altitude as a minimum. However, there are two alternatives.

The first is that if the aircraft is under the VFR (visual flight regulations), the pilot may be as low as 1,000 feet above the highest obstacle in a 2,000 foot radius, and this makes the minimum about 1,400 feet over downtown Menlo Park.

If the pilot is flying on instruments, he could be 200 feet lower, or about 1,200 feet higher over downtown Menlo Park.

These extremely low flight altitudes are not the norm. In fact, relatively few aircraft are below 2,000 feet.

The unique exception, in the other direction, I understand, is PSA which maintains flight over Menlo Park at about 10,000 feet altitude. This greater altitude obviates the lower-level, 200-knot maximum speed restriction.

Well, how are we affected now by all of this?

I can sympathize with the frustrated German householder. He rigged up a catapult and he fired "Kartoffel-kloesse" at the incoming airliners. I don't know if he scored any hits or not, but—

Mr. **Baron**: For your information, he did.

Mr. **Hesselgrave**: He did? Three cheers.

Well tempting as though it might be, I have limited myself to noise measurements. These data prove very interesting. The typical commercial jet flying over my home registered between 70 and 74 dB-A on the A-scale on a General Radio Noise Meter.

For contrast, I went out to Foster City, the general region of Foster City, out at the end of this development near the San Mateo Bridge, and made a second set of measurements. Now, this is the final approach leg to the San Francisco Airport, and yet the aircraft noise readings were only six to eight dB greater than my Menlo Park measurements.

To give you perspective on these noise readings, and this may be a rough perspective but somewhat true, you might draw a comparison to the Richter earthquake scale, which is also logarithmic. When you go from the 30 dB, which is a rustling of leavers, to the 50 dB, which is the business office, to the 70 dB, which is the Menlo Park aircraft noise, you might liken that to going from three to five to seven on the Richter scale, and this latter span runs from unnoticeable to a most severe shake.

I should point out that we are disturbed not only by direct incoming aircraft, but besides these, we see aircraft overhead on almost any arbitrary bearing. These latter flights are in this 30-mile radius of the maneuvering area. Now any airplane in this area can be directed in any direction into a holding pattern configuration while the control center plans where to put him.

Another significant disturbance that we have is the outbound flights from Moffett Field in Sunnyvale to the ocean. For some unclear reason to me, except possibly the saving of time, these four-engine turbo-prop crafts are oceanbound and directed over Menlo Park. Now they also measure in the 70 to 75 dB(A) noise range.

These latter craft are a pretty good sample of the infrasound. One hears them approaching from far, far away, and they continuing coming for a long while.

Now what can we do about this disturbance?

I feel that the solution to a particular noise problem is completely within our grasp. It requires administrative, not technical, action. Our present exasperation lies in the fact that we all agree what need be done. We talk about the proposed solutions, but we do not make it happen. I feel that the necessary steps are simple.

We start by assuming that the FAA does, in fact, control the movement of aircraft. We then request that the steps be taken.

1. The FAA shall direct all inbound aircraft to approach the San Francisco Airport on a controlled power/altitude profile. The aircraft shall maintain minimum power to establish a glide-path approach.

The FAA, incidentally, stated as long ago as last Fall that this approach pattern was being instituted. The aircraft flights to date obviously do not reflect this pattern. To confirm this observation, I visited the Oakland Tracon this summer. The personnel at this center were not aware of any directive to control the power/altitude profile. If such an order has, in fact, been issued, I should appreciate further data on it.

2. Each and every member of the Air Lines Pilots Association should recognize that aircraft noise in this socalled maneuvering area is objectionable. A certain percentage of the pilots fly with a heavy hand. These "throttle jockeys," as the Tracon personnel have pointed out, follow directions explicitly and quickly. A command such as, "You are clear to descend to 4,000 feet," is obeyed with alacrity. Drop down, level off and back on with the power. The alternative pattern of drifting down in a quasi-glide path would have been equally acceptable and far less disturbing to us groundlings. The mere fact that some of the aircraft overhead are just whispering by indicates that such control is possible.

3. The Environmental Protection Agency establish a recommended maximum allowable noise level for aircraft. In contrast to my readings, the FAA has stated that the measured aircraft noise in the Menlo Park-Woodside area does not exceed 50 dB on the A Scale.

Well this has been demonstrated in the past to be achievable and I believe it certainly would be an acceptable level.

I feel that our freedom and salvation from tyranny and noise is in our own hands, so then let us act.

Dr. MEYER: Thank you very much.

Mr. Martin, do you have a comment or question?

Mr. MARTIN: No. Just for the gentleman's information, one of the new things that is being implemented, I believe in Minneapolis, is a first step—This is a two-segment approach, which once it is accepted, that the pilots can do it without any problem and they will, in a situation like this, be able to come in at a much higher altitude.

Dr. **MEYER**: I understand, also, that the National Aeronautics and Space Administration, which people continually forget is concerned with airplanes as well as space, is running in conjunction with the FAA and several of the airlines, some very specific experiments along the lines of better control let-down procedures to take care of this problem.

Mr. **MARTIN**: There are also some new innovations in automatic pilot controls, that are computerized for noise abatement procedures.

Dr. **MEYER**: Will this take away the throttle-jockey approach?

Mr. **MARTIN**: Just about.

Dr. **MEYER**: Dr. Dietrich?

Dr. **DIETRICH**: Just a question having to do with your—the organization of your presentation. As you got to the point where you ask the question, "How are we affected," I thought that perhaps you were going to tell me what activities your community is affected by. Rather I heard about the noise levels, which were in the 70's, as I recall, 70 dB(A).

I am not quarrelling as to whether those might not interfere with some of your activities, but perhaps you could answer my question. In what way do these noise levels disturb people?

Mr. **HESSELGRAVE**: It gets to me a great deal. I go out and shake my fist at the airplanes. That's the first thing.

The second thing I find that they wake me at night.

Dr. **DIETRICH**: You mean that it gets you out of the house and that—

Dr. **HESSELGRAVE**: Just as the plane goes by, yes.

The second thing is that it is sufficient, as was pointed out in some other testimony, a noise level in the 70 dB(A) is sufficient to, even given a 20 dB(A) gliding factor through the house itself, is sufficient to arouse you from sleep, and it has done just exactly that.

In addition to that, it disturbs conversation. I find that a television, radio or record program must be turned up to a louder volume as the aircraft goes by. It interferes with the normal daytime and evening activities.

Dr. **DIETRICH**: Thank you.

Dr. **MEYER**: Mr. Baron?

Mr. **BARON**: No, no questions.

Dr. **MEYER**: Mr. Hildebrand?

Mr. **HILDEBRAND**: No, sir.

Dr. **MEYER**: Thank you very much, sir.

I would like to now ask Miss Ann Fibush—Am I pronouncing it correctly?

Miss **ANN FIBUSH**: Yes.

Dr. **MEYER**: If you will come forward.

STATEMENT OF ANN FIBUSH

Miss **FIBUSH**: Good afternoon, panel. I would like to present a rather humorous presentation, because I thought something as serious as this noise abatement that perhaps people would like to laugh a little bit.

Somebody said to me one day last week, "Why don't you join Nader's Raiders?"

And I said, "I think I will wait until they are called Needer's Nedgers."

And it occurred to me today, since my by-line is permissiveness promotes pollution, that maybe I should call my people Pauline's Persuaders.

This morning someone said that we were talking about people planning. And I just looked at the agenda and this has to do with enforcement and regulations, so I will address myself to the base of the problem.

Now, when I studied under Alex Osborne in creativity and brainstorming and creative thinking, we were not allowed to call it a problem. Everything was a challenge.

And I think unless we are going to have a megalopolis of mediocrity by the year 2,000, we should start using imaginative solutions to all of our environmental problems.

And I decided to devote my energies to noise abatement, because I think a great deal of time and energy have been given to air pollution and water pollution, and I think that the three of these things will eventually be considered together and we will get a better environment.

Now it also occurred to me that most human beings in their behavior patterns, if you ask them to do something which is reasonable and you explain why you are requesting such action, that most of the people will respond logically; and, therefore, the ordinances which will be required and the policing should be brought to a minimum if we devote a great deal of our energies at this point to educating the public to exactly what is happening.

I dare say that the average layman knows very little about what noise does to him. As long as he can still hear, he doesn't really think much about it. As long as he doesn't live in a noisy neighborhood, it doesn't bother him. As long as he doesn't have to work in a noisy place, he is not concerned.

When these things compound themselves, when you live in a noisy environment and you have to work in a noisy environment, and you have to put up with noise on the highway to get to a quiet place, the physical release then becomes greatly diminished.

Now this morning—I wish I could remember exactly which speaker said this, and I think it was Mr. Boggess, that noise could be divided into loudness, quality, time, frequency, duration and intensity.

And according to Dr. Verne Knudsen of UCLA, the noise level will increase on decibel per year until the year 2,000, at which time we will all be stone deaf.

So when gentlemen talk about economic feasibility, it creates a little ire in my female mind, because I don't care how much money one is going to have, if you can't hear it is going to be a terribly tragic problem.

Now, another thing that hasn't been discussed today, and perhaps it doesn't have to do with regulations, but I think it is a pertinent point and I think Mrs. Maxwell touched upon that that noise also depends upon whether this noise is a sudden noise, and if you are subjected to many violent and sudden noises and yet you don't know when they are going to occur, it is a known fact that adrenalin is secreted in your system and this changes your bodily functions.

Now, it was not until I, as an artist, who is primarily concerned with environmental exterior and interior design, that I discovered that noise can affect your sight and your sense of color, that I decided that I had better pause and address myself to noise abatement, until such time I might not be able to even see the colors that I am working with.

Now I think there are three areas of which we need immediate attention, and I hope that the federal government will assist us.

I hope to work as a liaison officer between the federal, state and local government, and perhaps I should interject a little humor here, because I always feel that if you have a problem or a challenge, you have to come up with a creative solution.

So, as far as regulation is concerned, what if the federal government deals with the feasibility of, the state government deals with the sanity of, and the local government deals with the latitude of controls?

I should like to say that the three areas which need immediate concern are municipal buses, motorcycles and automobiles.

Now, one of the things that has occurred to me, as I listened to these noises in the city, that someone discussed earlier, that there are different standards and interstate regulations, I think there are also different standards between the United States and Europe.

I think it is paradoxical that Europe, which has some of the finest regulations, in some areas, will export Volkswagens and Porsches, and so on, to this country. And I hope that you will pay some attention to the noise level from foreign cars.

I would like to ask a question. Is it standard equipment on a Volkswagen, and how many years back does this go, to have twin-pipes?

Now, I think that this has produced an incredible noise level. Somebody told me that this produces economy of gasoline consumption, which I think isn't a criteria for consideration. I think that the noise is very important.

And I also understand that Porsche, Audi, or however you pronounce it. It has now been made a part of Volkswagen. And I commend it to you that somebody should get the statistics between a 1971 Porsche and a 1961 Porsche. Whereas we used to have a few Porsches going up our hill, I would say that we have 150 Porsches speeding by now.

We have a number of young men who have come to maturity and like to let off steam and go roaring by on motorcycles. Not one, but two, three and four abreast, and this goes on from early morning until sometimes 4:00 o'clock in the morning the next day.

And I brought up the point of sudden noises and loud noises, and the secretion of adrenalin because this gets you to the point where even when it doesn't occur, you are all ready for it, and this does something to your body.

So I ask that certain things be done. Perhaps we can have a midnight to 7:00 a.m. curfew on certain noises.

The one point I do want to bring up here is that I think that all human beings have to let off steam. And when I was a youngster, they had a concession out at the beach where you got in this car and you could ram into the next guy and you could practically spin him around. And the antenna went up to a graph-like ceiling and the man controlled the power, and could—you could just ram and bump into everybody else until such time as this became a disaster area, and he simply cut off the power. Now to my knowledge they have taken this away. I think that these things are very necessary.

And I think we have got to delineate the use of vehicles. A motorcycle has got to be either a law enforcement vehicle or getting from one place to another.

Now they have said that they are going to set aside certain areas in the desert so people can go and race their motorcycles. This will alter the ecology of the desert, but they feel that this is the least sacrificial area.

I would suggest that motorcycles should be transported in a pickup truck from an urban area to this area and get as many motorcycles together at a time as you can so that they can drive themselves crazy instead of us. And I think it is a crucial point.

When somebody uses something for a toy to amuse themselves to the detriment of the community at large, I think it is time to do something about it. So, enough about motorcycles.

I was going to suggest, and I think in my letter to the Board of Supervisors I did. I said, "Let's get the motorcyclist off of the motorcycle into a symphony, because if you have to listen to the motorcycle noise long enough, the average person won't be able to enjoy a symphony." And I think it is simply a matter of getting people to do things that are interesting rather than detrimental.

Somebody was talking about the compatibility of airports. I hope you are ready for a little more humor. And I wondered how airports could be compatible anyway. But Ogden Nash says, "As far as husbands and wives are concerned, husbands should have income and wives should be patible."

And someone else said something that led me to the thought that we have become a land of outlaws and inlaws, one grabbing at the land and the other yelling about it.

And I think that I shall end there. I had a lot of other things that I would like to say, but hopefully I will get to work with your department and I will share them with you then.

Thank you very much.

Dr. **MEYER**: Thank you very much.

Panel? Dr. Hildebrand?

Mr. **HILDEBRAND**: I would like to say concerning the Volkswagen and the two mufflers, the related problem, it may be that the consumer has been conditioned to want a certain sound from the type of automobile that he busy. And perhaps a Volkswagen with one muffler wouldn't sound like the Volkswagen that the—he wants.

And I would add as a comment that the American housewife will not buy a quiet vacuum cleaner because for some reason she doesn't feel that it has the power to clean her rugs properly.

Miss **FIBUSH**: Yes, I think this is a tragedy and I think it is something that we have to educate out of the human being before we all go deaf.

Dr. **MEYER**: Mr. Baron?

Mr. **BARON**: Well, the legend of the housewife who wouldn't buy the vacuum cleaner, I think one of the things that the EPA should be doing is searching out these legends and separating fact from fiction. I think that a lot of fiction has been converted into fact.

Would you, as an individual, be disturbed—Of course, you are unique in your attitudes, and your awareness of the noise problems, but would you associate noise with power as far as household tools?

Miss **FIBUSH**: No, I do not. In fact, I would not buy a vacuum cleaner that made excessive noise because I know better. But I am sure a lot of people wouldn't.

I wouldn't even have a dishwasher because I figure that the noise that the average dishwasher makes far surpasses the time it takes for me to get through the dishes by hand.

Mr. **BARON**: One last question. You say this has affected you as an artist in colors, your sense of color. How did you become aware of this and what were the noise sources?

Miss **FIBUSH**: I am not saying that it has affected by sense of color. I am simply saying that there is scientific knowledge available to state that is true. I could give you fascinating testimony to go along with Mrs. Maxwell's about the fatigue factor and how this has affected my eyes. I have recently been to the doctor because my eyes were inflammed. So I know that I am on the road. I am simply trying to do something before that happens.

Dr. **MEYER**: Anything else?

Dr. **DIETRICH**: I feel compelled to say something about the Volkswagen automobile. It does not have two mufflers, of course, but two tailpipes, as you have mentioned, and that they added that second tailpipe over a decade ago as part of the power increase. They thought it was necessary to meet the market demands.

I am unaware whether that effect was accompanied by any noise increase in the vehicle over the model without that, but I think it is most interesting that of the motor vehicles that you mentioned and concentrated on, you mentioned two brands of automobiles, and a class of motor vehicles, the motorcycle, which share one thing, one very important thing in common. They are all air-cooled engines, and as such have a particularly hard time of controlling the noise; that is, not only to do they suffer from the usual problems of exhaust noise silencing and the difficulties of that, but they suffer from the problems that other engines do not, and that is that the engine itself radiates noise through the thinning for air cooling. And so you have touched very correctly on a weak area in this sense in terms of our ability to control noise in modern vehicles.

The only other comment I might make, and I would like to ask you a question in this connection, you talked about the attractiveness of noise to some segments of our society. I would like to ask you whether you believe that it is proper to encourage the making of noise through such things as training children to appreciate toys which have noise-producing capability, or that—or to continue this attractiveness of noise?

After all, there are adult party items. There are noise-makers for adults. Do you think that this is something you would like to see turned around?

Miss **Fibush**: Yes, I should say so. I have seen adult parties making noises. And child-oriented noises can be delightful, provided we weed out these other abusive noises in our daily lives.

And I think that the mere fact that the Volkswagen only has really gotten to me in the last six months is directly due to the fact that there are so many more cars on the road.

Dr. **Dietrich**: Yes, it is clear that the sales of some of these things, like motorcycles and the foreign cars, have been going up, so you are exposed to more of that kind.

But I wasn't speaking about humans—I hope I didn't confuse you. I wasn't speaking about human behavior so much as the unaided, the mechanical devices.

Miss **Fibush**: I see.

Dr. **Dietrich**: Do you think that it is proper to promote and sell toys, let's say, on their noise-making capability, like a cap gun, as an example?

I know it has another problem, that it is a gun toy, but leave that aside. How about just a toy with noise-making capability alone?

Miss **Fibush**: Well, shall I say this. For instance, on New Years, everybody just cuts a loose and you can make all of the noise that you want to and everybody expects it and you are sort of out if you don't.

Now, the other day I was driving down Van Ness Avenue and I saw a girl who was probably 26 years old with a noise maker, leaning out the window with it, and I thought, "Poor dear, she doesn't have anything better to do."

I think that is tragic.

So in answer to your question, I think it is marvelous. I think that everybody expects to make noise. But I think as the population increases, and the detrimental noises, if we can't weed them out, everybody is going to have to be more thoughtful of his neighbor, because I think a child with a cap gun can startle the daylights out of you if, pardon the expression, you are overpolluted, and I mean with noise.

Dr. **Meyer**: Well, in that light, the testimony we received in Chicago from several very noted individuals working in the field of otology and otolaryngology clearly indicated that the hearing of the younger population is being adversely affected by such things as cap pistols, extremely high levels of amplified music, and that they do indeed show a significant increase in hearing impairment as compared with findings percentage-wise in these age groups 10 and 15 years ago. There is a problem here that does require considerable attention.

I mean, after all, we all recognize that hearing is one of the avenues to the brain, and certainly one should not shut that off.

Any other questions or comments?

Thank you very much.

Miss **Fibush**: Thank you.

Dr. **Meyer**: Mr. Charles Crisman, representing himself as a private citizen. Mr. Crisman, we always like to hear from people who are giving their views on these problems of public concern.

STATEMENT OF CHARLES CRISMAN

Mr. **Charles Crisman**: Thank you, Mr. President.

First I would like to start out by saying that I got here around 10:00 o'clock this morning and found this day to be quite invigorating and to be quite interesting. I have learned quite a bit so far.

Tonight I am here because by last June I had become concerned enough about noise pollution to write to my Congressman, Philip Burton. I was, and am still concerned about the increasing noises in my neighborhood. I was, and still am, worried about reading that research indicates noise can lead to ulcers, high blood pressure, heart attacks, and other things.

I know from personal experience how the noise from outside can disrupt the educational institutions at work.

Congressman Burton responded to my letter by letting me know about the Environmental Protection Agency. And I subsequently received information from the EPA about the hearings today.

So I am not an expert, but rather a citizen who has researched the subject matter on noise pollution.

The statements and questions presented here concern eliminating unnecessary noises in the city and how the proposed Environmental Protection Agency bill would help solve that problem.

Frankly, much of the technicalities in the draft bill are confusing to me, so maybe my questions seem naive. But I believe that many other citizens are as interested and as curious as I.

It appears that under the proposed bill that the Administrator of the Environmental Protection Agency will not be authorized to set noise control standards for military aircraft or NASA research.

I have a chart that I drew up, just sort of for my own information and other people. The way that I categorize noise as it affects me, and I think it affects other people in society, and I put in military, commercial, local and domestic and industrial.

And at this point I am going to continue.

Isn't it incongruous for us to be sitting here discussing standards for the industry when the federal government itself is exempt? I recognize that the national security is important. I am talking now about military aircraft.

I live in San Francisco on Potrero Hill, and there seems to be a lot of aircraft coming over there from all different directions, and I couldn't tell you where it is coming from. I have no idea whether it is coming from the San Francisco Airport, the Alameda Naval Air Station, or wherever, but every once in a while there's these obvious jet that are military jets coming over.

At any rate, I realize that the national security is important, but estimate that many of the military directed flights over our cities don't really fall in that category. Or do I misunderstand the bill and the situation?

I am concerned, also, about how the proposed bill affects the authority of local government to solve its noise pollution problems. For an example, let's take the outrageous noise made by the San Francisco beloved GMC buses. The acceleration of these buses continuously bombards your ears, whether you are riding on or waiting for one. My reaction seems to represent the feelings of many San Francisco citizens, at least everyone I talk to.

It is obvious that a correction is needed, at least a modification.

The questions that come up regarding the EPA bill and GMC buses goes something like this:

"Will noise control standards established in the future by the Environmental Protection Agency be applicable to buses purchased by San Francisco years before?"

I find Section 60 of the proposed bill to be confusing. It leads you to believe that the Administrator of the Environmental Protection Agency prescribed noise control standards. It does not, however, clearly define the authority of the city.

I am interested in knowing how the city government itself sees the question of how noise ordinances can be effected.

Another question goes like this:

"What if there is conflict of interest between the Environmental Protection Agency and San Francisco Government on permissible noise levels?"

"Can the City require mufflers on transportation equipment that the Environmental Protection Agency has said meets production standards?"

"How can we be sure that when the Environmental Protection Agency Administrator considers a proposed noise standard, he is letting the local government have some discretion?"

I am certain that most citizens in this city and state favor noise control standards. However, I am afraid that much of this positive outlook can be misdirected.

Of the five major distinctions, I see in the noise pollution problem, the two minor ones appear to be:

1. Domestic noises, such as lawnmowers, televisions, etc. These can be handled on a city and neighborhood level.

2. Industrial noises, such as machinery whistles, etc. There is some evidence that industry is already doing something about self-regulation and local or state government can easily step in.

However, three areas that really worry me the most are the commercial airlines, and I am including helicopters and other forms of transportation; local transportation, including GMC buses, which destroy my words, my thoughts and my actions; and military aircraft, which is an occasional annoyance in my neighborhood. It causes my electric doors to go up and down and various other things that it causes distractions.

The views I have presented obviously cover many specialties and levels of government. It is all very confusing to many of us, but I am sure of everyone here, that many of us in California are very worried about this.

I hadn't planned on saying anything else, but I have heard so many people say so many things today that I was interested in the—you know, the motorcycles and these different buses, and everything, and I hope that the Environmental Protection Agency can find some way to enforce regulations, set up standards, so that it will help to alleviate this.

And I don't want to take anymore time to go into this. I think that everybody else has made enough points. I am just interested as a neighborhood person. That is all.

Dr. MEYER: Well, thank you very much. And let me very briefly try to answer some of the questions you have raised, because I think it is important that they be answered, and that the record shows this.

First, let me come to this last question you raised. Obviously, about enforcement: that's one of the purposes of this hearing—for us to explore ways in which we can do a better job of developing legislation and enforcement methods.

Rather quickly, let me see if I can answer most of the questions that you raised.

The noise standards which the Agency will develop with regard to military or NASA activities will be applicable unless specifically exempted. In other words, they don't have an automatic exception.

The setting of noise standards from commercial aircraft is a responsibility at the present time, and it appears it will continue, with the Federal Aviation Administration. There are, however, some mechanisms now being set up by which, if the law is passed, that the EPA could suggest regulatory standards.

If the FAA and the Department of Transportation don't want to accept our recommendation, they have to publish a statement to that effect in the Federal Register. This opens up the door to environmental impact statements, public hearings, and so on.

With regard to the noise standards for equipment now in operation, such as buses purchased years ago, federal rules would not apply. Only on new equipment.

With regard to the relationship of those standards, and what the city government could do, the federal government will consult with people like yourself, with industry, with professional groups, with lawyers, to try to come up with a standard that will be meaningful in protecting the public no matter whether the buses are running in San Francisco or in New York City. Some people object to this pre-emption provision, but the fact remains that people's ears are people's ears. And if the bus in San Francisco is causing a noise problem affecting people, it is very likely to cause one in Dallas, Fort Worth, Washington, or wherever.

The law, though, does allow the city to set what could be called use standards, which says after a certain hour of the day no bus could run, or buses could run only at certain speeds which would produce lower noises.

The questions is rather open, though, as to whether the city could require, say, mufflers on equipment that meets the standards. My legal people tell me no; if it meets the standard only by putting these additional devices on, would it in some way be related to a special user consideration, say, during certain hours in certain areas, or in certain zone. This would clearly be a local responsibility.

With regard to military aircraft, I think it is worthwhile to point out that the Department of Defense has some rather specific rules and regulations about reducing flight operations which produce noise.

I did observe myself yesterday while in San Francisco, two military aircraft flying across the city making some pretty intense noise which seemed to be violating their own rules, and something which we will look into further.

I hope I have summarized for you the answers to most of your questions, sir.

Panel, does anybody else have a comment?

Dr. **Dietrich**: I have a brief comment.

Dr. **Meyer**: Yes. Go ahead, sir.

Dr. **Dietrich**: I would like to make a brief comment, just with respect to the buses, because you talk about the buses purchased by San Francisco. And you say that you are a resident of San Francisco so, in essence, you, through your tax monies, presumably, or other monies, purchased those buses.

I want to make it clear that you have the very same right with respect to those buses that you have with respect to anything else that you purchase. You could have bought them as quiet or as noisy as you wanted by exercising your right as a buyer. I am saying that to you as the city—as a resident of the City of San Francisco.

There is nothing that says if the federal government has certain limits for motor vehicle noise, including bus limits, that any buyer might not choose a much quieter vehicle and decide that's what he wants to buy. He can't necessarily force others to buy it, but he can make that decision for himself just as the city, through its powers of operation of this could decide that they could run certain noisier buses only in the daytime, or in less noise sensitive areas. They could decide to buy much quieter buses for the more noise sensitive areas. All of those are decisions that they can make, and it doesn't mean—you don't have to look to Washington is what I am trying to say. You don't have to wait for the federal government to act.

Mr. **Crisman**: May I make a comment on that?

Dr. **Meyer**: Yes, please do, sir.

Mr. **Crisman**: The point that I am particularly concerned about is the harmful effects of these noises. Now, I wasn't here in San Francisco at the time that these buses were purchased. I am now a voting citizen of San Francisco, and if there is a proposal on it, I will vote against anything to increase noises in the city.

However, I appreciate your pointing that out to me, but the point that I really would like to emphasize, which I forgot to mention much about—I started out by saying that I thought the noises are really a distraction. A lot of other people have mentioned previously that some schools on the Santa Monica Freeway, or somewhere in Los Angeles, are affected.

Wiel, I go to San Francisco State College and it is hard to concentrate when you are in an English class and the teacher is trying to scream over her lungs. And she expects you to concentrate on what she is saying, or he, whichever the case may be.

But the thing is the noises are so loud by these buses, and even the streetcars in the city here. I am just an amateur and

I am reading about it, but—to learn something about what can be done. But my hands are sort of like tied.

I am hoping that you experts can help to convince some of the politicians, like Diane Feinstein, or some of the people like that that I understand are interested in helping getting a noise ordinance.

Dr. MEYER: I hope we will be able to rise to that challenge, sir.

Any other questions, or comments, of the panel?

(No response)

Dr. MEYER: Thank you very much, sir. I appreciate your time. I appreciate your staying with us.

Is Mr. Robert Shaw here? Mr. Shaw, would you come join us please, sir?

STATEMENT OF ROBERT SHAW

Mr. ROBERT SHAW: For brevity I have reduced my statement and summary to one question, and that is that I request that the Environmental Protection Agency use its good offices to persuade the U. S. Navy to transfer the touch-and-go practice landings by aircraft at Moffet Field to a less populated area.

Dr. MEYER: Mr. Shaw, I am happy to receive that request, and I shall, indeed, in my responsibilities as the Director of the Office of Noise Abatement and Control, relay this to the Navy through the offices of the Assistant Secretary of Defense for Health and Environment.

Are there any questions, panel?

I will ask a question.

Because there's a lot of controversy among the professionals as to the significance of these test methods and of people's reactions, could I ask you how close you live to Moffet Field?

Mr. SHAW: Around about four miles.

Dr. MEYER: About four miles.

Mr. SHAW: But there's a circle that the planes make, touching up, around, down, up, around, and we are right on the circle where they make the bank to come in. Because they are banking, I suppose they have to use more power than if they are coming straight down.

Dr. MEYER: Thank you very much, sir.

Mr. SHAW: You are welcome.

Dr. MEYER: As I said, you may rest assured that this will, indeed, be transmitted to the right authorities.

Mr. SHAW: Thank you.

Dr. MEYER: Is Mr. Carrington? Mr. Carrington?

Mr. RAYMOND C. CARRINGTON: Yes.

Dr. MEYER: Oh, thank you, sir. We had you down here as not having arrived.

Mr. CARRINGTON: I am not sure that I will ever arrive, but I am here, sir.

Dr. MEYER: It depends on what frame of reference you are putting that in, sir. It is nice to have you here.

STATEMENT OF RAYMOND CARRINGTON

Mr. CARRINGTON: This is going to be a little different than you have had so far, because I am trying to make a matter of record something that has already come to pass, but I think it is of noteworthy importance to you gentlemen on EPA, and the people in general that can do something about the noise pollution problem created by the Air Force and the scattering tactics and techniques they have for stopping this particular type of activity.

To take you very quickly over what has happened, I am an artist and also a well-known teacher. And I have a summer house in Mt. Shasta, California, which is located 250 miles north of here.

And after a nice vaction in Canada, I returned to my summer house to enjoy the rest of the summer, and arrived upon the scene of continual and rather aggressive sonic booms, which had never really occurred before.

Now, my home is in the Bay Area, in Fairfield, California, so I know that this is not a pattern which is consistent with the locality down here, and it seemed rather difficult to realise that this was happening in this mountain community.

So I proceeded to tolerate it for a while, and as they continued twice a day, often at 10:00 in the morning, 12:00 noon, and as late as 10:00 o'clock at night, I became rather concerned with it, and asked some of the natives what it was all about.

And their answers went into three categories, generally. "Doesn't everybody have it happen?" "Isn't it a sign of modern times?" "Could it be—" This is one approach that they had.

Another approach was, "Well, we don't want to say anything because we might get into trouble."

And a third approach was, "Well, what do you do?" "Where do you turn?"

And so, finally, I decided that I was going to do something. And I called Hamilton Air Force Base in Marin County and said, "Why are we having these?"

And they said they would check on it. And suggested that I call Kingsly Field in Klamath Falls, Oregon, which I did do. And at Kingsly I was told that I just might check at Beale Air Force Base at Marysville, California.

And so I called Beale Air Force Base and spoke—I requested the Base Commander and received an audience with a Colonel Evans, who was very nice and treated me like an idiot making a call about something I had no control over. But he did end up by saying, "Well, Mr. Carrington, I don't want to sound as rugged as this does sound, but what do you prefer? Do you prefer our aircraft making sonic booms over your area, or would you prefer MIG-21's?"

I told him I couldn't make the choice because I hadn't been subjected to any MIG-21's so far. But at this point I am afraid that the gentleman did irritate me slightly. I am not unaccustomed to Air Force techniques. Marysville is a strategic air command base. I am an ex-Air Force intelligence officer from Travis Air Force Base. I am familiar with the service. I am familiar with public relations, somewhat. But I became very sensitized with this, so I immediately made contacts with San Francisco Radio Station KGO where I am known and have done shows, and I did a show that night about the sonic boom problem coming out of Beale Air Force Base. And I asked people to write in to the Base

Commander saying, "Dear Base Commander, we had a sonic boom at this time and place. Please stop."

Strangely enough at that time, the 10:00 o'clock sonice booms ceased to exist. That was it. No more 10:00 o'clock at night sonic booms.

But we were still getting them at 10:00 in the morning and at 12:00 noon on a regular pattern.

The day after I had made this radio show, my secretary took a call which came from McCord Air Force Base in the State of Washington. And a Major Williams from the Public Relations Office there, PIO Office, did state that the SR-71 aircraft from Beale were causing the sonic booms in the Mt. Shasta area. He stated that they were training missions and would cease "in the near future," whatever that meant. To me that is an open-ended deal.

He went on to say, and he repeated it twice, because apparently —She does have a French accent and he apparently thought she was a little bit other than native. He said—He said, "Ma'am, these things are a—they have to fly at these speeds or they will fall back to earth."

And he repeated this twice. Well, I am familiar with high-speed stalls at altitudes of this nature, but it seems to me that this is not the answer to the question. So I went further and did marshall some of the local newspapers. It is a very small community, very sparsely populated. We did get newspaper coverage between the advertisements for lettuce, Pepsi-Cola, and so on. We got news space in there. I got three television stations to do interviews and to run them to get the public to start writing in.

I specifically, myself, contacted Congressman Leggett's office. He is my Congressman. I am sure you are familiar with him.

I contacted the office of Congressman Johnson and also Senator Cranston. These people did commit to the fact that they would try to do something. I received calls back from their offices stating that they had contacted Beale Air Force Base and that Beale had come around to the point that there were many military aircraft making these flights over Mt. Shasta and that I should come up with specific times and dates, which I did do.

I furnished all three Congressmen and the Senator with this information, and I never again heard from the office of Senator Cranston. I did get a moderate response from Johnson, but I got a very good response from Congressman Leggett's office. They said that they had been involved in this before and that it would be quite a fight, but if I stuck with it, they would do something. All right.

I, in the meantime, contacted the Pentagon, Washington, D.C., the Inspector General's Office, and so on, and I kept going until I got to the Director of Flight Operations. And I kept saying the same thing, "When are these things going to stop?"

Well they kept sending, apparently, a stalling tactic type of information. They first send you a brochure on the SR-71 saying, "This is fantastic. It works well for your defense." And I don't argue with that.

They said, in their brochure, that sonic booms could be aggravating, and that we should tolerate them. They also stated that the only time the SR-71 really does create a major problem is when it decreases its altitude below 80,000 feet and refuels. They say at that time it has to go into sonic flight, fly into sonic flight, and refuel from a jet tanker, and then go supersonic to climb back to the 80,000-100,000 foot altitude and then from that altitude they said that they don't create much of a boom problem. Maybe they do and maybe they don't. I don't know.

The pattern that was coming out of Beale, apparently, as I could find out, was that the pilots were climbing from Beale dragging the sonic boom cone behind them, of course, and passing right over northern California and southern Oregon, and when they get to the 80,000 foot altitude, they were going on to their mission, to the East Coast. They were going to Louisiana and so on. At least I got this much from Leggett's office.

Also coming back they would come down over this flight pattern, and the area would be subjected to these booms.

Now to bring this quickly to a halt, the thing is that I suggested to the Air Force, "Why don't you expend a little more fuel, fly out to the ocean at sonic speed, make the climb over water, then come inland at your 80,000-100,000 feet which you claim is not too damaging? I realize you have to refuel in the middle of the United States, but you could alter your refueling pattern so that you are not going to consistently hit the same area over and over."

Now as far as the impact locally on the environment of Mt. Shasta, I am not going to be telling you gentlemen anything new that you don't already know about SST's. I will say—In sonic booms and so on—But I will say that the SR-71 impacting this small mountain community was as follows:

The Fish and Game Commission, which I contacted, stated that there was a change in the feeding habits of the fish. There would be a temporary suspension in the biting or feeding of fish.

They claimed that in the field—I talked to one man at Fish and Game who claimed that in the field the pheasants went absolutely crazy with this impact of a sonic boom.

I contacted the United States Forest Service, and they said their main concern was in terms of avalanche or roll-down activity from boulders, to both the mountain climbers and mountain roads. The Forest Service also said that they were concerned with the nesting habits of birds because, apparently, when birds are frightened off of their nest, there is a danger of chill factor in the eggs in terms of the hatch.

So that basically is it. I cannot plead strongly enough with you about the way that the Air Force has treated this.

Now we gave—In one month we gave quite a bit of adverse publicity to the Air Force, because I did another show out of San Francisco on KGO Radio. But I received a letter from the Base Commander, by way of Congressman Leggett's office, and in it the Air Force surrendered. They changed the flight pattern, or route, and in this—I would like to quote just a little bit of it from the Base Commander, and his name is Confer, C-O-N-F-E-R, Colonel, Base Commander at Beale.

He stated, "Investigation has confirmed supersonic flight of aircraft of this Command over Mt. Shasta."

Now he knew all the time that they were flying over there, so we will not go into that.

"On the dates alleged in Mr. Carrington's letters of 16 and 17 August 1971, these flights were directed by higher headquarters to accomplish specific requirements. These special requirements have been accomplished, and sonic booms generated by the SR-71 should show a marked decrease in the Mt. Shasta area."

Well I think that the adverse publicity was the termination of their missions.

"The flights of the SR-71 aircraft are controlled and directed by higher headquarters," they say, "on every flight over the United States and every effort is made to select routes that overfly isolated and sparsely populated areas. The Mt. Shasta area falls into this category. The SR-71 has been flying over the United States for many years, and the number of sonic boom complaints is extremely minor compared to the number of people who have been exposed during this period of time."

I think that is a tragic statement, because they say that the people have been subjected to this and haven't been complaining.

Now I will quote in a moment some of the reasons why they haven't been getting complaints.

All right. They say, "Additionally, we are continuously revising and varying routes to avoid excessive exposure to any area to supersonic flights.

"In reference to Mr. Carrington's letter of 27 August of 1971, I wish to voice the strong objection to the accusations contained in the last paragraph. This Command has never denied the responsibility for sonic booms created by our aircraft."

And I would like to interject here that I also have, if you need it, a statement from Public Information Branch, Office of Information, at Hamilton Air Force Base, from Sergeant Tom Collins, in which he states that they suggest that he call Beale Air Force Base, California, which he did, and they said it was not any of their aircraft.

And this is the type of hanky-panky that leaves the public confused and the credibility gap does widen at this point. All right. They go on to say that they have logs which you gentlemen are familiar with in terms of supersonic flights, and that can be available through legal channels.

I will not go any further with this letter, because that is about it. I will say that I can enter it in your record, this letter from Sergeant Collins. If you wish it, you can have a copy.

Some of the tragedy that comes out of this is the fact that the American Public doesn't realize that gentlemen such as you do avail them of an opportunity of what is bothering them. They don't know how to get out to their government. Often they won't even write their Senators or Congressmen, or talk to anyone who can do anything.

Here is a very quick letter from a lady by the name of Mrs. Gary Sarti, S-A-R-T-I, of Mt. Shasta, California. I asked people to write me some of their complaints. She had an aquarium broke, 28 gallons, so she states, on the 6th of July at a quarter to 5:00 by a sonic boom.

Now that's a small tragedy, but she lost her fish. That lady is probably afraid to issue a complaint to the government. You should see the forms that they send out, the damage form. It is enough to frighten people in a small mountain community half to death, and they are always afraid of getting into trouble.

Here is a letter from a ten-year-old girl, Lorraine Perry. She says, "I am ten years old. I would like the sonic booms stopped. They don't scare me. They just hurt my insides, and my pony, too."

It is kind of interesting. Here is a letter from a lookout who is on the Forest Service watch duty for fires. He says, "It is especially bad getting awakened at night with a sonic boom. I have the lookout at night and I retire early." He says, "I have protested for some time, but I didn't know what to do about it."

This is your public problem. People don't know how to reach their government and that's where our government fails.

Here is a letter, to show you some of the problems that do develop. This is from a lady in Mt. Shasta, Jean Martin. She states, "Another sonic blast rattled my windows of my apartment causing my drapes to ripple for several seconds after the boom. There have been several hard enough booms to really frighten visitors from Los Angeles, as well as ourselves.

"It is ironic that people come to our beautiful area to get away from city noise, dirt, and so on, and they are frightened away by this type of sonic boom.

"I am pretty disgusted to have to move my china far enough back on the shelf so that it doesn't get damaged. It seems equally disgusting that anyone should have to write a letter about these disturbances. Surely the powers that be who set the routes knew where their planes were going and were well aware of the disturbances that it causes."

That's enough of that. I could go on with letters, but the thing is, gentlemen, those people have gone somewhere else in Northern California. There are other peasants—rather, pheasants and peasants, who are bothered by this thing. But they probably don't know the routes by which they can get sufficient power to cause the Air Force to think twice about it.

It is only by turning it to agencies, such as you, that citizens, such as myself, can hope for power to protect the people who just aren't perdurable.

Dr. MEYER: Thank you very much, sir, for providing us with this information. May we have some of that material for the record? There's several aspects of this that requires some further action.

Mr. CARRINGTON: You can have every bit of it.

Dr. MEYER: One of them being, of course, that there are some questions as to whether or not defense agencies ought to be filing environmental impact statements before undertaking such types of exercises, if they are true plans and not emergency defense operations.

As a former military man, I am sure that you are aware that what may seem to be a routine non-emergency thing takes place in a period when the world seems calm, but is not really very calm. And that things are required which simply have to be because if they weren't done, you might find the situation that the man was telling you about.

Mr. **CARRINGTON**: Well, sir, I would agree with that if I could in just a second, but I would like to clarify one point there. The Air Force is not new to the problems they are creating.

In Trinity County they had to—because of Beale's activities, they passed an ordinance for the county saying they would prosecute for sonic booms, and there were cartoons in the paper showing a cop chasing an aircraft. There was a lawsuit from Beale Air Force Base, which a friend of mine on a television channel went up and covered from Beale Air Force Base. So what they are doing is shifting so that they get a minimum of comment.

Dr. **MEYER**: Well, the other thing I was pointing out is if these are training exercises, rather than actual emergency operations, then certainly we consider sonic booms to be noises that are annoyances, or otherwise objectionable, and we have an act that gives my agency right now the right to request that we be consulted in advance. That's why I wanted this information, so I could get it to the Defense Department and say, "Is this truly an emergency situation?"

"Was it a training exercise? If so, should we not be consulted."

And, in any event, if it is not a true defense emergency, then this sort of thing does get into the environmental impact area which requires some very special attention. So that is why I am very appreciative of receiving this information.

And as I said in my previous comments, though, speaking to you as one ex-military man to another ex-military man, there are some times when these things have to occur.

Thank you very much.

Mr. **CARRINGTON**: Thank you, gentlemen.

Dr. **MEYER**: Is Mr. Tarses here?

Mr. Carrington, with regard to the material for the record, have you got it—Rather than leaving it with the clerk, I would like to get that to go back to Washington. I do appreciate it very much. I want to take that material directly back with me.

Thank you very much, sir.

Mr. Tarses, thank you for being here, sir.

STATEMENT OF MARK TARSES

Mr. **MARK TARSES**: I was asked to speak here today by the agency over what at first appeared to me to be a very small problem, that of garbage trucks in my neighborhood. However, it developed into perhaps an illuminating illustration of what it is like to live with noise with calloused public officials to deal with.

I live at 2491 Ellsworth Avenue, Apartment 53, in Berkeley. The neighborhood could be described as follows:

It is entirely residential, mostly apartment houses, pretty closely spaced. Parking is underneath in most of them. The only non-residential building within a three-block radius is a small corner grocery store located in the first floor of an apartment building. Because of the density of population, garbage must be collected daily. It is five blocks south of the University of California campus.

Shortly after I moved into the apartment in January of this year, I began to be awakened regularly, usually about 5:00 a.m. by the sound of garbage trucks picking up refuse at the building that I live at and the ones around it.

By looking out my window, I could clearly see the trucks belonged to the City of Berkeley, because the City's insignia was painted on the door of the truck's cab and the name of the City was painted on the truck's cab.

After about a month of these daily nocturnal disturbances, I called the City of Berkeley, the Department of Refuse Collection. There I spoke to Mr. Badie, the Department's Supervisor. I told him what was happening. He assured me that the collections at that hour in residential neighborhoods were strictly prohibited by his Department. He also assured me that it would not happen again.

The next morning the garbage was collected at 9:00 a.m. For the next two days the garbage was collected at 9:00 a.m. I was very happy. In fact, elated for the first sleep in over a month. On the fourth, fifth and subsequent days, the trucks, however, were back to collecting at 5:00 a.m. Again I called Mr. Badie.

A vicious cycle began. The trucks would pick up garbage at 4:00 to 5:00 o'clock a.m. I would call Mr. Badie. He would tell me how sorry he was and that it wouldn't happen again.

For the next two days I would get a little sleep, and then the trucks were back collecting garbage at 5:00 a.m., and I would call Mr. Badie. This went on for about 15 phone calls, or about two months.

I should point out, also, that these trucks are bin loaders for the most part, which hold approximately, I am told, 400 gallons of garbage and weigh something in the area of over a ton. And when they drop them to the ground on their steel wheels, they just drop them.

I should also point out these trucks generally stand one half an hour in the neighborhood, picking up garbage once they hit the neighborhood. Because of the density of the apartment houses, I can see where they have to be there that long.

The noise is deafening. As I work in Berkeley and I have no car, I can't move very far away. If I could move away, I would do so. It has gotten that bad. Although I do like living in Berkeley.

After about 20 phones—phone calls to Mr. Badie—I'm sorry. I said 15—over a period of three months, I began to find it difficult to speak to Mr. Badie at all. The operator at the Department's switchboard would intercept my calls. She must have been able to recognize my voice by that point, and would tell me that Mr. Badie was out and would return my call. She also pulled this routine: "Who is this calling?"

"You know who is calling. You have heard me about 15 to 20 times now."

"Well, sir, I don't know who it is until you tell me who you are."

"This is Mark Tarses."

"Could you spell that, please?"

Then I would spell it to her.

"Could you tell me the nature of your business?"

I would go through this. This was every two or three days for two months, because the girl never recognized my voice, or so she claimed, and he was never in. And she told me that Mr. Badie was out, that he would return my calls. None of my calls were ever returned.

Finally, I managed to speak to Mr. Badie. What happened there is that that particular girl was out for the day. I think she was sick and they brought a substitute in who hadn't been properly warned to intercept my phone call, and she put me through directly to Mr. Badie.

He explained that the trucks had to be out—and these are his own words—had to be out to pick up the trash in the neighborhood. He further explained at 6:00 a.m., or before. No later than 6:00, anyway.

He explained that this was because of an "engineering study" conducted by the Department which conclusively proved that if the trash was picked up later, it would caues inconveniences to motorists.

I pointed out that picking up garbage at 5:00 a.m. causes inconveniences to residents in the neighborhood, and asked him whether that factor had been taken into consideration in this report.

He said that he didn't know. I asked to see a copy of the report. He told me that he didn't have a copy, but I could find a copy at the City Hall library of record.

I later discovered that no such library existed.

He suggested that I not bother myself with the report as it was written technically, to use his terms, and that I wouldn't understand.

I have researched every possible government—I have researched every possible library and government office in the area in the entire East Bay to find a copy of this mystical report. So far my search has been futile. At this point I am assuming if a report exists, which is a fifty-fifty chance at best, that one of two things must exist. First of all, it might be so inaccurately compiled they don't want anybody to see it. Or, second of all, the entire factor of noise wasn't taken into consideration, which is another factor that they wouldn't want to be very well publicized.

That's just my guesswork on that.

After another month, and this is now into the fifth month, in the building, the trucks began to pick the garbage up at 4:30 in the morning, instead of 5:00 o'clock. The operator of the Department now intercepted my calls to Mr. Badie and referred me to non-existent people working in non-existent departments. I would frequently be referred to a Mr. Smith or Mr. Jones. These people worked for departments such as the Berkeley—the City of Berkeley Noise Control Board and the Director of Refuse Collection Vehicle Pool Center. No such offices or departments exist.

By my best estimate, I have made over 50 phone calls related to this problem. I have sought relief at every level of government. I have written to the Berkeley City Council, but have not received a reply to my letters sent two months ago. And I might add that as of my phone call last week, the City's Clerk's Office had not even received a copy of the letter, although I sent a duplicate copy later. I have been told that they were involved in more important matters, the Berkeley City Council, such as discussing withdrawing the City of Berkeley from the war in Vietnam and drafting letters of support for Eldredge Cleaver. This is what the City Clerk tells me are more important matters.

I am constantly tired. I am frequently feverish and moody after I can't sleep for several days, much less six months, in a row. But at 4:00 a.m. tomorrow morning, as sure as I am sitting here, I know those garbage trucks are going to be collecting that garbage in front of my building.

Dr. MEYER: Mr. Krause (sic), I can understand your—

Mr. TARSES: Tarses. The name is Tarses.

Dr. MEYER: Mr. Tarses, I can understand your extreme frustration with that situation, and my faux pas here didn't help it any. It wasn't deliberate, I might say.

Mr. TARSES: I am sure.

Dr. MEYER: I don't know how the Environmental Protection Agency can intercede into a local matter, other than to see to it that the fact that this testimony was presented here is transmitted to officials of the City.

But I think it really highlights a major problem of citizen-government relationship. I am sure that some of the members of the panel may have some thoughts on it, too, but it disturbs me greatly that this is so similar to the previous witness' statement, who was receiving the same sort of run-around, if you will, the same sort of frustrating treatment dealing with the federal government, the Department of Defense, the Department of Air Force, on a sonic boom problem, which is at one extreme of the acoustics spectrum, and you getting the same thing at the other extreme, which was noise and nuisance affecting sleep, and the acoustical energy involved.

It certainly, in a little capsule, puts this whole picture together in a way that is very emphatic.

Perhaps Mr. Hildebrand, Mr. Baron and some of the others may have some other thought on it. But I assure you that I am deeply concerned about this.

Mr. Hildebrand, do you have any thoughts?

(No response)

Dr. MEYER: Mr. Baron?

Mr. BARON: Garbage truck noise is one of the things that has interested me ever since I saw and heard quieter garbage trucks in Germany in 1967 and recommended it to the City of New York in purchasing trucks that they specify quiet. This is an illustration of our design for quiet in specs. It could help solve a problem, because these trucks are capable of generating 100 or more decibels of noise. They are extremely irritating.

This is a problem, the City claims—This is just not your city—that is these trucks pick up in the daytime, that they run into a traffic problem. I am not going to go into that. But the point of it is that it seems to me that when we talk about setting standards, that an instrument or a vehicle that is known to be operating at nighttime—This came up, almost the same idea of rural or country things—should not be permitted to be defined at a level which we know that sleep is disturbed, and these—some day garbage will be picked up in a different manner. But as long as we have to live, in the foreseeable future with this primitive technique, then it seems to me that we need designed specs.

And I would like to say that it is not pie-in-the-sky, incidentally, though I am all for—We do need R&D—apply R&D as far as noise and quiet is concerned. There is a special kind of pump and in the proposed New York City code they call for a, I believe, 75 dBA level for garbage trucks, and they do that because they know that this pump will be able to deliver that, a compacter unit. So that the problem becomes this: Shall we wait until the federal government sets a standard and shall we hope that the federal government shall include garbage trucks in that standard.

Dr. **Meyer**: We will.

Mr. **Baron**: Also, my suggestion to you is, and you heard what the previous speaker said, is that you, in one sense—and your story is not atypical. This story can be multiplied a million times in the United States, this type of experience—to get others who are subjected to somewhat similar experiences to create a stronger voice so that the city council and department of sanitation, whatever you call it, hears a little bit better.

Mr. **Tarses**: I would point out a particular problem in that respect is that the particular neighborhood that I live in in Berkeley has primarily a student neighborhood, being so close to campus, and a lot of the students living in the building who I have spoken to and in the neighborhood, seem to feel that any effort to communicate with the city government would be futile. And I find that this is especially strongest among the people my age rather than among the people, say, a generation older than myself.

It seems like a futile gesture to even try. I have tried to even get a petition together, and I have had difficulty of getting anyone to sign it because of genuine—apparently a genuine fear of having their names reported with the city government.

I know that years from now I am going to look back on this particular incident—It has got certain—I guess I said black humorist overtones that—

Mr. **Baron**: No. Now, I would like to say this. I would like to say this is not black humor. I mean there is a tendency—There is something about noise that causes people to smile. I hope we do a study on why we do this. This is not—This is tragedy. This is part of the tragedy of what has happened because we have allowed noise to run rampant all of these decades and it has only been lately that we have started paying attention to the problem.

There is no black humor, or any other kind of humor, about it. But a way must be found to get across to the city government, which is the only agency responsible at this time, and that—and if—Here is a challenge to convert student energy. They are—Their rights are being violated. They are a very activist group, and this is part of the educational problem, so that the citizen realizes when he can't sleep or when he is tormented in other ways by noise, that his rights are being violated, just as if they were being violated by somebody walking into his house without a warrant, etc., etc.

I am just trying to get across some of these educational problems involved with this. But as far as technology is concerned, there are quieter trucks on the market now. But in New York

City, the City trucks aren't allowed to start, unless under unusual circumstances, until 7:00 o'clock in the morning. But we have the private trucks start earlier, and we have the same problem—and this is quite universal, this fear of complaining.

Dr. **MEYER**: Well, it is an interesting thing. I don't want to belabor the issue too much, but I did read somewhere in the last several weeks that there's some court decisions which clearly provide that students have some legal rights to cast votes in certain types of municipal elections, even though the place they are living is not their legal voting residence. So I would think that working within that sort of an approach, maybe this feeling of futility, could be changed a little bit by using the right of the 18-year-old vote, and so on, to really make some inroads into this sort of problem.

Does anybody else have a remark?

Dr. **DIETRICH**: I just wanted to remark to Mr. Tarses that it is possible that the noise that he describes, as the noise of garbage collection, could be not only the truck but also the handling of the bin, the metal receptacle, and I think he brought up a very good point here—that is, if there were federal standards, let us say, for a new garbage truck that said they had to meet certain standards for quietness, that they might be ineffectual in meeting your needs if in fact we had the loud matching container, metal container, that presumably stays on the premises and is filled during the day with garbage, if we allowed it to be uncontrolled with respect to the noise-producing propensities.

Dr. **MEYER**: Thank you very much, sir. We appreciate your taking your time and your patience.

Mr. **TARSES**: Thank you.

Dr. **MEYER**: I would like to ask another very patient gentleman, Mr. Krause, if he is still here if he would come forward and . . .

These are long days, but we do want to hear what people have to say.

STATEMENT OF LLOYD KRAUSE

Mr. **KRAUSE**: I thank you for your patience in staying here long enough so that I could be heard here today. I think you all have a copy of the text that I have prepared that describes and documents some obstacles that do arise in attempting to control traffic noise in suburban communities.

I would like to quickly share this with you. And I would like to say, too, that some of the expressions, some of the facts, that the man that preceded have expressed or disclosed, I can confirm in other settings, other situations. I haven't been to Berkeley except as a student 20 years ago, but the same sort of thing happens elsewhere. Noise complaints do invoke ridicule, certainly at local levels, and perhaps elsewhere as well.

And, furthermore, there is a distinct futility in efforts to cope with some of those problems.

Now I want to speak about motor vehicle noise in particular today. Not because it is the only form of noise offenses, but because it is one that I have had some particular exposure to and I have decided to focus on it for today.

Motor vehicle noise, in more and more residential areas of the San Francisco is bad and getting worse, and nothing yet is being done to control it. One residential town traversed by an interstate freeway built in the 1960's showed civic unity in attempting to somehow undo the ill effects of the freeway, but city hall can't do much about a freeway that is controlled by state highway officials and financed largely by federal highway funds. Superficially, we might hope that local control is the answer to the problems of remote unresponsive big government. But is it in fact?

A neighboring mixed residential and commercial city has no state or federal roadways in its residential areas. During the 1960's, two heavily travelled expressways were built in residential areas of this city, one by the city and the other by Santa Clara County. The city has two commercial areas, one along the county expressway and the other along a state highway, El Camino Real. The city expressway interconnects the two, passing through approximately one mile of prime single-family residences.

Single-family homes are located along substantial portions of both roadways with property lines only about ten feet from the road's edge in many places and seldom as much as 25 feet distant. This expressway—These expressways are used by more than 20,000 vehicles daily, including the largest trucks permitted on the interstate freeways. Traffic moves at 35 to 50 miles per hour on the city expressway and 45 to 65 miles per hour on the county expressway. No provision is made for noise control. The roadways are at surface level, not depressed. There are no earth berms or masonry walls to serve as noise barriers. There are no truck traffic restrictions on the county expressway. Trucks of all sizes are at all times free to use the city expressway for service to points within the city, and hundreds of trucks, including the largest diesel rigs, use it daily at all hours. Enforcement of speed and muffler violations is slight.

The city expressway is nicely landscaped and presents a pleasant visual impression to the occupants of the more than 20,000 vehicles that use it daily. But while it is beautiful for travellers who traverse its length in a minute or two, it is fulsome to residents who can't escape its continual din only by taking refuge inside their insulated houses or by leaving home.

The existence of family homes along these thoroughfares, rather than only commercial, industrial or other noise tolerated land uses, is the result of conscientious deliberate choice, in fact, unyielding insistence by the community expressed through zoning actions. No other land use than single-family homes will be considered in spite of the fact that roadway noise renders these lands unfit for the outdoor activities of family life. Yet, paradoxically, the same local government that insists upon family resident land use does not act to control the traffic noise that renders these lands unfit for such use.

Petitions to the five-man city council in 1969, signed by nearly 300 citizens to control noise in the residential areas traversed by the city expressway, proved to be an exercise in futility, because they were opposed by a well-organized merchant association with 75 members, of whom one half were not city residents led by a paid professional PR man. The city's chief administrative officer and the city attorney opposed the petitioners' efforts from the beginning. The petitioners sought a 25 mile-per-hour speed limit and the restriction of very large heavy trucks in the residential area traversed by the city expressway.

Large intercity highway trucks operated for the U. S. Post Office were—and still are—principal offenders; they run every day and night, undaunted by rain, snow, sleet, and residents fervent wishes for relief from their raucous roar. The Regional Director sent his delegates to a meeting requested by the petitioners to work out less offensive routes and schedules. The delegates concluded that such routes and schedules were operationally feasible, but might slightly increase Post Office trucking costs and would, therefore, be implemented only if required by city ordinance.

A few corporate good citizens, like Safeway Stores, temporarily rerouted their trucks to avoid this residential area, but resumed operation there after the petitioners were defeated. Others, like Shell Oil, refused to reroute unless forced by city ordinance to do so.

To compound the offense, the city has declared that it would not permit residents to erect noise barriers on their own property, at their own expense, higher than six feet, because higher barriers would not be visibly pleasing to those passing by. Available data suggests that an eight-foot masonry barrier might reduce noise levels by about two to three dB more than a six-foot barrier.

I have little doubt that similar and worse situations are found in many communities throughout the nation. Thus, faith that local government will act to control traffic noise is badly misplaced, at least for now, in some localities.

A few hopeful signs are beginning to appear. It is reported that the city council of the neighboring city of Cupertino asked its City Planning Commission to give residents whose homes back up to an interstate freeway special permission to erect eight-foot noise barriers, at their own expense, to protect themselves from freeway noise. The progressive City of Palo Alto has for years banned heavy trucks in residential areas, and is now mounting a special effort in community noise control, with emphasis upon motor vehicle noise, deemed to be the worst offender. Voter in Menlo Park earlier this month by an overwhelming majority instructed their City Council to halt plans for the Willow Expressway, a major state highway through their city. Aversion to noise, expanded urbanization and other highway disamenities were principal factors in the vote.

Nonetheless, the need is great for leadership by the federal government, to point the way for local government, and where necessary, to lay down requirements that must be met by local governments that are insufficiently sensitive to citizens' needs and incapable of action to meet those needs.

The pending federal efforts to set nationwide standards for vehicle noise emissions are worthwhile and should be carried through but are not alone sufficient. Too many years will elapse before significant relief is felt, because it will take years to implement these standards at worthwhile levels of emission control and more years to turn over our inventory of pre-standard vehicles.

Direct victims of roadway noise are usually a small and powerless minority in any community and therefore often are politically impotent, in contrast to politically well-organized groups such as merchant associations whose members may—rightly or otherwise—feel threatened by efforts to control traffic noise. In order to muster enough power to get action in a community that responds mainly to power groups, the noise victims must enlist in their cause others who are less directly harmed. However, some citizens who are not directly harmed have at times opposed the roadway victims' efforts to obtain relief, for a variety reasons that include (1) fear that traffic might be diverted to other streets if it is restricted in the victims' area, (2) fear that noise remedies would raise taxes, (3) a general callous indifference to a community problem that doesn't now hurt them in an immediately visible tangible way, and (4) simple unawareness of a bad situation from which they are sheltered.

High density thoroughfares are totally incompatible with family residence areas. Yet such roads have been built in a number of prime residence areas, thereby degrading the residential quality of these areas. Traffic continues to mount on these roadways, compounding the offense.

Commercial and industrial land uses are much more compatible with roadways, and the obvious conclusion is that our commercial and industrial facilities, not our residences, should be placed along these roadways. Residences should be distant from these roads. Access to heavily used facilities would be improved and economic return on lands would be maximized. The commercial structures would serve to shield the distant residences from road noise. It is not done that way in many cases because local authorities who control land use think they don't like the looks of commercial structures and because these authorities aren't yet committed to solving traffic noise problems in the community.

Land used for single-family homes along existing expressways should be converted to noise tolerant uses such as commerce and industry or else traffic flows should be reconfigured to reduce traffic in these areas to levels compatible with family life. Where these land-use or traffic pattern changes are not effected, noise controls such as sound barriers must be installed, paid for by roadway users who cause the noise that must be controlled.

Highway fuel tax allocation priorities should be reshaped for noise control, and noise control on existing roads should have equal priority with new road construction. Roadways constructed in the future must be so located as to stay out of residential areas or else must incorporate effective and adequate noise control.

Advocates of new road construction, who encounter increasingly severe opposition, may find that effective action to remedy current roadway offenses will also soften opposition to new road construction.

Esthetically pleasing and acoustically effective precast noise barriers engineered to satisfy state highway standards, are becoming available from a newly organized Peninsula firm at a cost of about $10 per foot, installed. At the present time the resident who is a victim of roadway noise must alone bear the cost of protecting himself from the harms of noise inflicted upon him by the roadway users. Prevailing attitudes of local officials at city and county level reflect this view.

The cost of remedy for offensive traffic noise should not fall upon the victims; it should be paid by those who cause it. The motor vehicle fuel tax is a marvelous mechanism of demonstrated efficiency for financing a road construction and should be used to pay for controlling roadway noise, not just on new roads built in the future, but for remedial noise control on roads already in place.

Investments in noise control on existing roadways must have top priority in the allocation of fuel tax revenues. A small fraction of the total annual appropriation for building new roads, if allocated to noise control, could work wonders for alleviating the growing problem. Noise control is needed only in sensitive areas that constitute but a small fraction of our total road mileage. Furthermore, the cost of noise barriers—about $50,000 per mile for one type of precast barrier—is small relative to expressway costs that range upward from $500,000 per mile.

Motor vehicle traffic noise can be controlled. We should organize ourselves to get on with the job of controlling it, and the cost of control must be paid by those who cause noise, not those who suffer from it.

Dr. **MEYER**: Thank you, Mr. Krause, for a very well thought-out presentation which, again, sort of ties in with the frustrations of the two previous speakers.

The fact that you also gave us some solutions to the problem, as well as depicting the problem, is most useful.

Mr. Martin?

(No response)

Dr. **MEYER**: Dr. Dietrich?

Dr. **DIETRICH**: When you said that truck noise enforcement was practically non-existent, were you making reference to the fact that teams using the sound level meter techniques that have been described earlier have not been used, or that they have been used so sporadically that you feel that vehicles that violate the present state limits still operate, or neither of those?

Mr. **KRAUSE**: I have to smile with pain as I listened to the question. This is a city expressway. It is not part of the state highway system. The widely heralded California State Legislation, the laws on the books in this state that are often cited as being, you know, a real example of what can be done if the state puts its mind to it, and especially the fact that these allowable levels of—levels were reduced by, was it, two dB or four dB as a result of the Los Altos Hills Committee, no help. Sorry.

First of all, those state standards talk about 82dB at 50 feet distance. We are talking about houses and roads that are like ten feet apart. You know, I said at the edge of the property line of these residential properties is ten feet from the edge of the travelled way, not ten feet, you know. That's one of the problems.

Secondly, the Highway Patrol has been making measurements and using its team—the State Highway Patrol has been working on the state freeway system. This is a city street. No help. The Highway Patrol doesn't have jurisdiction over it.

Furthermore, the local police don't have a noise meter. And, further still, they have got other things to do. And, further yet, when they do run casual speed controls, the expressways—the speed limit on the city's roadways is 35 miles an hour. The enforcement limit, of course, can't be 35. It has to be more like 35. When they do run speed checks, they get a lot of people very angry. I got a ticket for driving down the freeway at 45 miles an hour. The presumption is that this is a wide road. It is a divided roadway. It has a hundred foot right-of-way, a divider strip in the middle of 16 feet. This roadway was made to be driven on fast. You will get expressions like it is ludicrous to think of a 25-mile speed limit. Some of this ridicule cited earlier comes out very clearly in these circumstances.

Attempts to convert those lands to non-residential usage is just—You know, the residential suburban community just doesn't want commerce right down the middle of its residential areas.

Dr. MEYER: Mr. Hildebrand?

Mr. HILDEBRAND: No.

Dr. MEYER: Mr. Baron?

Mr. BARON: I am just curious about the acoustics effect of this wall. You said it was certified or something by the state.

Mr. KRAUSE: Oh, I was speaking of not its acoustical properties, but its wind loads. It is engineered for safety—I said it was engineered for safety standards to meet the requirements of the State Division of Highways. And the reason I brought that up is that some other precast designs that have been proposed in the past that would have low cost are found unsatisfactory because they don't meet the wind load standards. And the designs that do meet the wind load standards tend to cost more than $10 a foot.

Mr. BARON: Well, I am curious in wondering if you have any comments—again about the shadowing effects of low frequency waves which come from traffic, of the effectiveness of this kind of barrier. Do you care to comment?

Dr. DIETRICH: I presume that when you suggested that an eight-foot barrier might be better than a six-foot barrier and so on, that you were talking in terms of a slight reduction, let's say a weighted noise reduction—

Mr. KRAUSE: Right, precisely.

Dr. DIETRICH: What is important—it is the noise reduction that is important for the livability of the space. I don't want to go into the technical details anymore about that, but I was—and I was, I guess, properly disheartened to hear that the state regulations don't apply on city streets, and that apparently the city governments are powerless or just not equipped to act to enforce anything like that.

Mr. KRAUSE: More sadly yet, if I might respond, even if—suppose we had a perfect enforcement mechanism that indeed enforced the 82 dB ceiling at 50-feet distance measured by SAE standards, and that we had perfect enforcement to accomplish those objectives in this residential area, 82 dB at 50 feet in an area where the roadway, you know, the moving vehicle is like ten feet from a property line, 82 dB at 50 feet is no comfort at all. 82 dB, even if the roadway were 50 feet from the property line, 82 dB is no comfort.

Dr. **DIETRICH**: No, I wasn't suggesting that.

Mr. **KRAUSE**: And, of course, 82 dB is the limit for automobiles. For trucks and motorcycles, it is higher than that, I grieve to say.

Dr. **DIETRICH**: Well, I only wanted to make a comment about the apparently stubborn clinging to the use of this land, in the other road, as a residential area and residential uses; that is, in research done in Southern California, I know that it was a fairly common finding that as a result of a social survey that a considerable number of residents near freeways actually liked the noise effect—and I don't mean they liked the noise—they—I will finish that phrase—

Mr. **KRAUSE**: Okay.

Dr. **DIETRICH**:—by saying that the effect of the noise on the property value is what they like. It depresses it, as we have been told several times today. And, in their own words, "I couldn't have bought such a big house or such a piece of property if it hadn't been noise blighted," to use another witness' phrase.

I suspect that your situation you described is too far gone to even benefit from that particular viewpoint.

Mr. **BARON**: I just think that this is kind of a grizzly—this is black humor, indeed, that one takes noise as a way of playing around with real estate values.

But I appreciate your making this—vivid this point of the proximity of residential living to a high-speed highway because it applies not only to single-family residences, but we have the same problem with highrise dwellings. They are building a coop city in New York City. They have finished some of it near a high-speed highway. I think in this case that you are over 100 feet, something like that, from the highway. The people are complaining bitterly.

And you have helped to make the problem very vivid, and you have also contributed very nicely, again pointing out some of the more—that is a complex situation that applies to all of these things. But also the fact that local government, in many cases, will not take the steps that have to be done.

The tragedy is that the highway was put there in the first place.

Mr. **KRAUSE**: That is right. May I speak—I'm sorry.

Dr. **MEYER**: That's all right. I was going to thank you very much, but if you have something else to say, go ahead.

Mr. **KRAUSE**: I would like to respond on this point. I expressed the single-family residence. I am sorry to say in many cases there's another presumptive solution, and that is, well, instead of taking the single-family dwellings, let's put apartments along there, which in my mind compounds the problem. Instead of having like 15 people to an acre living in single-family residences, you might have several times that, so you simply increase the number of people that are being subjected to this. And it is a sadly perverse illogic.

Mr. **BARON**: Well, there's a logic—Some of the airports suggest that there should be factories next to the runways, and things like that, so this is a milder form of that kind of thing. However, it is conceivable that with the back—a solid back to the road, something like a fortress effect—

Mr. **KRAUSE**: Yes.

Mr. **BARON**: It doesn't allow anything outside except a quick dash to the nearest car or bus.

Mr. **MARTIN**: There is an effect that you could do if you were to, say, build today. You could almost insulate the people living in those apartments, and if they didn't have a backyard, but a front yard, they are completely, then, insulated from the noise both in and out of the house.

Mr. **KRAUSES**: Exactly. We are talking a lot about design concepts, exactly like that.

Dr. **MEYER**: Suggestions have been made to use apartment-type dwellings with the insulated walls as a barrier.

Mr. **KRAUSE**: Precisely, and I think that's a very good way to go, but it is a long way from that solution to where the people who make the land use and planning decisions in the cities are now. It is a long way from grasping the message.

Mr. **BARON**: The British have done some interesting work, as you know, in designing—

Mr. **KRAUSE**: Who, sir?

Dr. **MEYER**: The British.

Mr. **BARON**: The British. In designing roads, high-speed roads in the cities.

Dr. **MEYER**: Very good. Thank you very much, sir.

Mr. **KRAUSE**: Thank you.

Dr. **MEYER**: Is Mr. Beckerman here? Mr. Beckerman, you have been waiting an awful long time. You are the anchorman.

Mr. **JAY BECKERMAN**: Well, I would hope this would be an end to your long day.

Dr. **MEYER**: Well, tomorrow won't be quite this long. I think we only have 15—a total of 15 witnesses for tomorrow, but everybody should have their say and we are happy to have you, sir.

STATEMENT OF JAY BECKERMAN

Mr. **BECKERMAN**: The name is Jay Beckerman. I came with really some surprise. I didn't know that you were going to be here. I just saw it in the paper this morning. It is the first thing I have seen in the Chronicle concerning anything like this. I haven't seen anything in any of the other media.

I want to apologize for not being as well prepared as a lot of the other people, but until about a month ago when I accidentally ran across a copy of Mr. Baron's book, I didn't even know that such an effort as this was possible. I suppose I have been living with an awareness of sound problems since I went into the Air Force in '58. I was an aircraft electrician. One of my duties was to adjust the alternating current generator on aircraft, on jet fighters. And this procedure involved sitting on the wing of the aircraft while the aircraft was without a tail section, and this was—this particular aircraft was an F-86 aircraft, and they ran at full throttle with after-burn going, and if you have ever endured anything like that—I see a grimace over there—you can see where I ran into a problem.

It wasn't a matter of choice. It was a matter of "do it."

Well we were issued ear plugs. A lot of good that did. I managed to scrounge a brand name straight-away head protector manufactured by the David Clark Company. It wasn't an issued item. That was a sample.

I recall having my hearing tested when I was in basic in San Antonio. I can also recall that while I was in the booth having my hearing tested, I could hear the conversation outside of the booth. A lot of good that test did.

When I got out, my hearing was not tested. A couple of years later, I attempted to get an assessment of my hearing by the VA. They said the Air Force records were inadequate, so they dropped the claim.

I have got no substantial hearing loss that I could determine at this point. It is just a sample. I was a green 18-year-old. I went into a situation. There was no advice when I went in there. There was no help when I got out. And there's been no reference point ever since.

Now that's just a sample of how the military treats its young people. It breeds a little bit of cynicism.

My immediate problem has to do with something that has been irritating me for the last year, and that is, specifically, AC transit and Muni buses. Now I have heard people throughout the day talking—throughout the afternoon. I wasn't here this morning—talking about the exhaust. My problem has to do with what is right over your head, fluorescent lights. Fluorescent lights contain ballast. A—Ballasts are transformers. Transformers, if they are properly constructed or maintained, become oscillators. And the Muni buses are specifically General Motors coaches of type—Let me see what I have got down here. T8H5305 is the type used by San Francisco Muni and TDH5301 is the type used by AC Transit.

Now these buses have in common the fluorescent ceiling lighting, and I would invite the group of you to ride back and forth across the bridge or around San Francisco, or anywhere in one of these buses, but don't all take the same bus. You won't get a sample that way, a broad enough sample. But you will hear, and I think there's no reason to hesitate about it, you are going to hear a very high-pitched sound, a high-pitched squeal.

And a simple way to test for it is—where it is coming from is to ask the driver to turn the lights off. The squeal will disappear. When he turns the lights back on, you will hear the squeal come back up again. That is how I found out about it. It took me about a month to figure out where it was, but that was it.

The source of irritation sits not more than three or four feet from the passenger's head, if he is fortunate enough to find a seat. You are a good deal—You looked up. You are a good deal further than that from that system, and that system doesn't put out that kind of a lighting—that kind of a sound because it operates basically from a source of 120 volts.

The systems on the bus don't operate from a source of 120 volts. They have to get up there by a different method. There is a different method involved.

My first attempt at a solution was to call the manager—not to call the manager, but to write the manager of AC Transit, Mr. Bingham, and the letter that I got back from him after two or three attempts were to the effect that the problem didn't exist, or that it was a maintenance problem, which wasn't going to have any attention paid to it anyhow, so I more or less gave up on that man.

After that I attempted to find out from, for instance, local health authorities, county, city and state, what could be done about it. And the answer in sum that I got back was that there are no standards for this type of noise source. And, therefore, there was nothing they could do about it. They had no way of doing anything, even if they could find out about the problem, and they had no mandate to go out and investigate it. They would not on my complaint, and they could not on my mandate that they already had.

Something that I have finally gotten ahold of is the address of Ralph Nader's office in Washington, and I imagine sooner or later I am going to write to him. He seems to be the only person in existence who seems to have any success with GMC anyhow.

That takes care of one of my local pet peeves.

The second one is involved with an area that a lot of people today have commented on, and that is what is the—what does the city—in this case, Berkeley—apartment dweller do for his noise problems?

You have got a person here—I am a manager of an apartment building, so I can speak from a little better standpoint than, perhaps, some of my tenants could. This has nothing to do with the bus noise source. All I have said is all that I can say about that.

But the tenants' noise is a different kind of a problem. You have got a person who, if he had the money, he would probably go out and buy a house, so you have got a person who, for the most part, isn't recognized from the standpoint of being an owner when it comes to the city fathers' listening to him. He doesn't have that kind of economic class. That is left to the owner.

The tenant is left to get whatever he can out of whatever local officials care to listen to him.

Now my big problem is from two sources. One is the motorcycles that rev up behind my apartment building. And the second is the cars that rev up behind my apartment building.

Now the building that I am in is an older one built in about 1946. Fortunately it is largely of masonry construction. It is not what so many of the inquiring would-be tenants ask, "Is this modern plastic?" Modern plastic is simply the equivalent of an uninsulated building. You have non-staggered beams; you have got chicken wire with plaster, or chicken wire over plywood, and on top of that they put plaster, and that is the extent of the walls that are being built.

My building, fortunately, is not modern plastic. Unfortunately there's a half-block long building behind me that is modern plastic. Now my building doesn't have parking for all of the tenants. It was built in '46 when an ordinance didn't require it.

Well today the ordinances that govern the buildings of the modern plastic, like the half-long block monster behind me, those new buildings do have to have parking. And how do they do it?

Well it is simple. They go up one story and they put a complete concrete floor up on pilings, of course, and the pilings are the support for the main part of the building. So what you have done is that you have created a concrete-lined box, and that is where the parking is. It is completely open on the back, and it is open in, like two doorways, driveways, as it were, in the front. People can drive in in the front, and that is all that you can see, the two driveways. But I am the guy that has got to live behind this.

So the people come in there, of course, at all hours of the day and night. The people in these apartment buildings, I suppose, tend to be either young business types, or at least well enough to afford a fairly large car. Those who can't afford cars have motorcycles.

These people drive them in and that wouldn't be so bad, but on weekends and nights they also tune these things. Well I don't know how many motorcycle riders you know, but I have never heard one yet who didn't crank up his motorcycle by revving that thing at least about ten times. I suppose he thinks he is getting it nice and warmed up, and then away he goes. Only he does it under my bedroom window, anywhere from 6:00 o'clock in the morning right on up until around 11:00 o'clock at night.

You know, it would probably be—I could probably toss rotten eggs or something at him, but I refrain from doing such as that. On the other hand, the City of Berkeley's curfew ordinance, which the other young man here this evening wasn't aware of, which runs from about 9:00 p.m. until 7:00 a.m. doesn't cover such as that. At least not as far as the cops going to enforce it. It is on private property and they are just not going to do anything about it. I get absolutely no response at all there.

So I have got a problem, basically, in apartment-house design. Now this is an area where you may be able to have some kind of effect.

My solution for this kind of a problem would be to box the area, all right, but box it completely so that the noise stays where the noise is produced. So that, for instance, if these motorcycle riders want to rev up their motorcycles, they are the ones who hear the noise, not me. Frankly, I am damned tired of it.

Another solution would be, in these apartment buildings—everyone of them is multi-story. My building is two stories. We have stairs. They have elevators. Where do they put the pump for their elevator? They put it in a little building, a little room in the back. Of course, in the back of their building. All of the apartments are above the concrete separative for them. They hear none of this. It doesn't bother them. Their tenants don't complain.

You have got, instead, their elevator pump, which is working when the motorcycles are not. That's another area that you might be able to pay attention to. When they put these pumps in rooms, why can't these rooms be shut? Why can't the vents at least be sound-trapped? Why can't the elevators, if they have to operate on an electrically driven hydraulic pump, why can't these pumps be designed or be required to be maintained so they can't be heard outside of the room that they are in?

There's no local ordinance that governs such as that and I am the guy that has got to sit there and listen to this high-pitched whine. The same thing as on the buses, you know. It is the same problem all over the place.

So I have encountered, first, the problem when I was in the military. This is the problem that I didn't know that I could do anything about it. I have encountered it since, AC bus-type noise, and I have been told that no standards exist for me to do anything about it. It is not a case of voting something like that into existence. I don't have the crowd to get it on the ballot. No one else is willing to pay any attention to it. It is one of those problems that you can't see.

Pollution will get on the ballot because you can see pollution dropping on your desk. Try dropping that on the city manager's desk.

Apartment house parking design, the first thing you are going to hear about why apartment houses are constructed in the first place or why they economically feasible is because they can be built at a cost—a construction per square foot cost that is lower than a house cost. People don't invest in houses for economic reasons. They invest in them for other reasons. People invest in apartment houses for economic reasons, and those economic reasons, unless those people are made to pay for the noise that is created by those apartment houses, the people who build and the people who commission them are not going to pay attention to problems such as mine.

This is going to have to come from an area such as yours. At least some help is going to have to come from it.

Now I ran across Mr. Baron's book by accident. Something I would like to encourage, and Mr. Baron, I may simply be behind the times, because I haven't checked to see whether it is in print in paperback, but I would sure like to find that out.

Mr. **BARON**: It is out now.

Mr. **BECKERMAN**: Once more, if it were at a reasonable price, I would give them as gifts by the hundreds to people who ought to read them as well as to people who might enjoy reading them. Now that is a sample.

Further, I would like to find some means for a dissemination of CQC type organization availability. As far as I know, as far as I can find out, none exist in the Berkeley area. The previous speakers said that, for instance, down in Palo Alto and Menlo Park, and such, where they have had specific problems, they have created the organization.

I really don't expect the Chamber of Commerce to listen to me. I don't expect the Board of Realtors to listen to me. I don't expect the city council to listen to me. They just aren't going to do it. It takes real pressure groups to do that stuff. That they will pay attention to. And, Now, how can you get somebody to pay attention unless you have got specific problems?

It is these little ones that are the constant annoyances. These are the hard ones to focus on. These are the hard ones to get people anxious about and, therefore, they are the hard ones to cure.

Now, another sample of how something like this might be done would be—I can't find it anyplace aside from paying for it myself and I don't have the means to do it. For instance, getting advice on how can I be legally safe in trying to present information on, for instance, construction noise detriment? How can I present information on what it is doing to the construction men, to the union, to—so that the union men themselves, the worker, can bring pressure against the builders to cut out the noise of during construction time?

I read Mr. Baron's book that says that relatively quiet jackhammers are available. Frankly, I would be very apprehensive about trying to walk into a union meeting and telling a jackhammer operator that he doesn't have to put up with being deafened in the first two years of his employment. Frankly, I think either the builders or somebody else would find a way to sue me very quickly.

I would like to find, you know, organizations or sources of organized information that can tell me how I can go about organizing the kind of pressure that is simply economic pressure. Social cost, until it is turned into a common denominator of dollars, is not going to be worth a damn. There is no way to apply it. You have got to reduce it to that lowest common denominator.

That's basically the things that annoy me. A couple of things that I have heard here today I would like to address to Mr. Dietrich for one.

You mentioned the problems that are inherent in air-cooled engines. You mentioned that the radiator fins, I believe the heat radiation fins, were a source of the noise. I wonder if you are prepared to say that the air-cooled engines are inherently more noisy than the water-cooled engines?

I would like to hear a response to that.

Dr. DIETRICH: At the present time that's true, although some research is going on now concerning some newer designs, not necessary—necessarily on sale. I am thinking of some work being done in Japan. They seem to be narrowing the gap, that is, some of the larger four-cylinder automobile engines that Honda is building now are considerably quieter.

Mr. BECKERMAN: Than water-cooled?

Dr. DIETRICH: No, they are air-cooled engines. They are considerably quieter than the regular kind of air-cooled engine, though they don't approach the water-cooled engine. But it is a move in the right direction.

Mr. BECKERMAN: The problem that I find with making the kind of comparison that you made is that air-cooled engines are, as far as my experience is concerned—and I have been a Porsche owner and I am a VW owner—considerably smaller than, for instance, the engine that I am going to find in a Chevy Impala or a big Cadillac or, you know, just any normal-sized water-cooled engine car, so the engine itself per cubic foot of engine, if that is how you care to measure it, may be noisier. But the point is that the water-cooled engine is simply bigger.

And listen at the average stoplight, when you hear the Mustang drive up beside you, with the guy who has got it raised up on the special shackle springs, and see if you don't think that is a little noisier than my VW running next to it. My properly tuned VW is going to be an awfully lot quieter than his improperly set-up Mustang. It just happens time after time and day after day. You can't hear mine run. You sure can hear his.

Dr. Dietrich: Well, there is no question that people with water-cooled engines don't always keep quiet what the manufacturer has built into it, I will agree with that.

Mr. Beckerman: How can we—How can we, you know, attempt to come up—It is sort of a rhetorical question. How can we attempt to come up with a standard so that that will more often happen?

Dr. Dietrich: I think the state has made a move in that direction, requiring that not only the vehicle be quiet, meet certain quieting standards as it is sold, but also requiring that it be used that way. Now, according to the testimony today—

Mr. Beckerman: Under the threat of what, though, Mr. Dietrich? The state won't even—The state won't even enforce pollution requirements on an annual basis. The state police—I have had half-hour long conversations with supposedly people in responsive positions with the State Police in California. They are dead-set opposed to legislation which would require anything so simple as an annual pollution control device inspection. They want no part of it. Their criticism is that in other states it doesn't work.

This is in an area where there has been substantial opposition mobilized to the problems, of obvious forms of pollution, visible forms of pollution. Frankly, I find it difficult to believe that they are going to agree to noise control on an annual, or even semi-annual, basis.

Mr. Martin: Let me just respond to that. I think you are going to find the law is fairly new in California. When it first got put in, I was on one of the first Highway Patrol teams at roadside. And at that time they were very proud because they had their first 500 citations that they had given out.

Mr. Beckerman: What have they done since?

Mr. Martin: They have now given out 132,000 citations, and the type of things they are picking up now are the dune buggies, the very bad trucks, etc. Sure they are picking off the top of the problem, but you have got to remember that you have got six teams out there in a system that was designed for about 1,000 teams. And until somebody is willing to pick up the bill—and it isn't going to be the taxpayer—

Mr. Beckerman: EPA, maybe, with a grant?

Mr. Martin: Well, whoever it is, you are not going to have enough teams to do more than just top—chop off the real bad offender.

Mr. Beckerman: Well the obvious offenders, unfortunately, are the ones who are going to get picked off, and it is the other people who give most of us most of the problem.

And what I would try to encourage here with this kind of presentation is—and perhaps what is necessary is not to leave enforcement of this kind in the hands of local people. Local people are subject to local pressure.

On the other hand, local people are always proud to get a federal grant. They don't stop crowing about that. But the question is can your grants be controlled in such a manner that when they are actually applied they will do the kind of job that is necessary?

Dr. MEYER: I think one of the proposals in the legislation now pending in the Congress would help. There are several penalties involved for altering or changing, or otherwise modifying, exhaust or noise-control devices. The proposal is to work out a scheme whereby the fines are shared half and half, rather than giving a straight grant to provide some technical assistance, to purchase equipment. Then the state, or city, enforcing the law receives half of the fine to use any way they see fit. I think that approach may very well result in some rather active enforcement, particularly when some of these fines go up as high as $25,000.

Your presentation brought to light one other thing of considerable importance, and I'm glad that you mentioned it. We always get concerned about noise produced by things as they affect the surroundings, the people around it, or the things around it. Sometimes we need to remember the fact that there are passengers, people inside these vehicles, or these enclosures.

Your discussion about the noise from the ballast reminds me that when we start setting standards for noise associated with the transportation devices, we are going to have to set standards for the passengers as well as the person who is exposed. And I appreciate very much your calling that to our attention.

Panel, any other questions or comments to the witness?

Mr. BARON: On construction noise, the Federal Occupational Health and Safety Act, which is now in effect, would cover, it is believed, the construction industry because it uses interstate products and so on. And I don't know—They are trying to work out a system whereby the states will enforce, will adopt a somewhat similar regulation. And if they show the federal government that they will enforce this act, they will then become the enforcing agent, so that this is one step forward in trying to control construction noise.

There's many loopholes, such as you can give men ear plugs, and ear muffs, but then you will not accomplish what it is that you want to do.

On the business of organized—organizing a noise abatement organization, one of the fastest ways to work, I think, is to try to develop the conservation groups, such as the Sierra Club, California Tomorrow, and so on, who are becoming noise conscious. You might think about that for the moment.

Let's see. There was another question. In Germany, I believe, or in France, you cannot rev up a motorcycle in a courtyard, and somehow—

Dr. MEYER: That's France.

Mr. BARON: France. Somehow or another we must get these types of regulations in our communities. And a lot of it has to do with the climate, the attitude. This kind of a meeting would not have been possible two years ago in this country. And this is—You know, we are a little bit behind, but we are starting to get with it. We need to continue to establish a climate so that we don't laugh at the concept of noise pollution. The think will shift so that the noisemaker will become the one who becomes ostracized and controlled and not as it is now, the noise victim.

There is construction equipment—We have had hearings on that—that are quieter. They are on the market. There are quieter piledrivers. Industry, I think, is aware of the fact that its days of unlimited noise emission is numbered.

I think your approach to the unions is a good one. If you have any contact with the unions, I think you should remind them—

Mr. BECKERMAN: I am apprehensive about even approaching them. That was my point. I would really like to—I would like to find a way to make sure that—Like, for instance, I won't become the victim of a very resentful contractors' organization if I start activity of that type. I am quite aware of the economic power they have to wield. I would be financially unable to defend myself in a lawsuit if they chose to bring it.

Mr. BARON: Well the contractors are becoming aware, too, of the fact that they are contributing a little bit to the pollution of the environment, among other things. But you may have a central labor or trades council in your area, and approach labor as an entity, you see, instead of a specific union.

Mr. BECKERMAN: And if I may offer a—I would like to encourage any other questions that you have, but I would like to offer a final observation.

I am sort of, normally, turned off by people who jump on bandwagons. And I don't know if you read Charles McCabe's column this morning in the Chronicle. He had something to say about what he termed careerist. Mr. McCabe often times is right on the mark. This morning he was quite far off. It will have meaning when you read it.

What I am trying to get to is that to jump on a bandwagon is fine if what you wish is something that you haven't had to put your own effort into and thought into, something that you haven't suffered through. I think that most of us here have suffered through something in some way or another and don't wish to do it again, and that is why we are here in the first place.

My effort is, in a large extent, where my mouth is. I have just begun law school. One of my specific aims is to get involved and interested in the kind of an area where I can have a real effect. The arena for control of this nature is where the laws are written, where they are enforced, where the lawsuits are brought. And I personally intend to get quite highly involved in this.

And something also that I would like to offer is a suggestion for the EPA as it develops is that you take advantage of the opportunity that you have in tapping people who will volunteer for something that they believe. And a for instance would be a grant to work. For instance, for a second—for a second-year law student, a third-year law student, to come and work with your agency, to learn the ins and outs, as a regular program of internship.

The federal government has internships in other areas. I have been involved in one of them under another agency. And it can work. And I would suggest this: I would suggest that there would be no lack of people who would really be interested and, quite frankly, would be willing to undergo almost the starvations of the Peace Corps in order just to get with you.

Dr. **Meyer**: We do indeed have such a program and, in fact, we had a summer internship program this summer of some 14 people in the Office of Noise Abatement Control. I have three college-level students who are, in effect, interns in my office and two high-school-level type personnel who are working at the administrative level, so your idea is a good one and it is, indeed, being implemented.

It is now ten minutes to 8:00. We have had a long day. I think your comments at the end are just as important as those at the start, and you have given us a lot of food for thought.

There being a busy session tomorrow, of some 15 witnesses, compared with the 30-some-odd that we had today, I hereby declare this sitting of this hearing recessed until tomorrow morning at 9:00 o'clock.

Thank you, panel, very much.

(Whereupon the hearing recessed at 7:50 p.m., Monday, September 27, 1971)

TESTIMONY OF PERSONS WHO WERE SCHEDULED TO APPEAR BUT DID NOT, OR COULD NOT BE FITTED INTO SCHEDULE

Mr. **Ronald Pelosi** (Member, Board of Supervisors, City and County of San Francisco): San Francisco is currently in the process of developing legislation designed to reduce disturbing, excessive and harmful noise from our City environment.

Noise, it seems, is inescapable, but it is no longer the colorful human noise of yesteryear: the clicking of horses' hooves on cobblestone pavements, the expressive cries of street vendors, the shouts of children at play. Today noise, produced by a vast variety of machines, is debilitating.

Recent studies conducted by the Stanford Research Institute found that volunteer sleepers, subjected to noise while sleeping, awakened extremely fatigued. The fatigue, it was concluded, was caused by the effort to maintain sleep in spite of the noise.

Public complaints about noise are frequently received by my office and relate to noise produced by trucks enroute to construction projects, garbage trucks, Muni buses, compressors, jackhammers and other equipment, loudspeakers in public areas, unmuffled motorcycles, and general vehicular traffic.

With respect to the latter, the decibel standards set by the State of California are so high as to be virtually ineffective, 82 dBA being the lowest limit imposed on a motor-driven vehicle. Local communities cannot provide for lower noise emission levels realted to vehicles because State law has pre-empted the field. With some study, however, it would be possible to restrict the most noise producing traffic to certain streets of the City.

Early in July of this year, I introduced legislation which would create a Task Force on Noise Control in San Francisco to consider means for regulating and reducing noise in the City. The Task Force would have a two-year life by which time it would be expected to report to the Board of Supervisors and the Mayor with its recommendations.

The problem, of course, is not in merely drafting and passing a noise control ordinance but in developing standards and procedures which would make that ordinance have any effect.

As a consequence, the Task Force which I would have the City create would have the following purposes and functions:

1. to find means for cooperation between public agencies and private enterprise to make San Francisco a quieter city;
2. to undertake a comprehensive survey of noise in the City to ascertain:
   a. existing acoustical levels in various parts of the City,
   b. the major sources of noise,
   c. the contribution of major noise sources to the total noise level, and
   d. the influence of architectural form, site utilization, construction materials and building shape on noise levels;
3. to maintain a continuous supervision of noise conditions in the City
   a. by setting up a monitoring system to provide noise indices for various sectors of the City,
   b. by receiving and analyzing a regular summary of public complaints,
   c. by encouraging public interest and participation in the development of effective noise abatement programs, and
   d. by considering establishment of an inspection system with a staff of inspectors trained in the use of noise measuring instruments and noise data for the purpose of responding to public complaints, checking city and private machines and vehicles and otherwise assisting in the establishment of procedures for the enforcement of the regulations controlling noise; and
4. to recommend
   a. kinds of leadership and legislative action the City should take,
   b. standards for developing noise limits, regulations, and means for enforcement,
   c. means for preventing new noise sources, and
   d. effective acoustical design in public and private development.

The problem is not, of course, created by City interests alone. A garbage truck may come from an Indiana manufacturer, an air conditioner from Los Angeles, a bus from Detroit, a jackhammer from Newark.

The problem which confronts us is a national problem with which, however hard we may try, we cannot fully cope without national efforts and standards.

Specifically, with respect to our own local effort, the detailed work which must be done by a Task Force on Noise Control will involve an expenditure of funds which the taxpayers of the City can ill-afford at this time. Still, the problem persists and affects us all.

Federal assistance to carry out various aspects of this program I have outlined above would be most welcome; in fact, they will be necessary. I am hopeful that your Agency will be able to make recommendations to the Congress to enable local communities such as San Francisco to take effective and meaningful action for the abatement of such harmful and annoying noise as afflicts us.

Mr. Jim Knott (San Francisco Tomorrow): My name is Jim Knott. The President of SAN FRANCISCO TOMORROW, of which I am a member, has authorized me to appear before you today to give you our recommendations concerning noise pollution. SAN FRANCISCO TOMORROW was founded last year as a citizens' organization to encourage an environment in the City in harmony with its natural setting and the needs of its inhabitants; to create respect for its natural features, its people, and its flora, fauna, and marine life; to foster the orderly development of the City as a fit place in which to work and live; and to educate its leaders to the urgency of preserving the fragile environment which places San Francisco among the great cities of the earth.

We support the reduction and control of noise. However, it seems to us that considerable time is spent on refining studies, analyzing causes and effects of noise, gathering data, and not enough time is devoted to immediate solutions to control noise.

Most of the sources of noise are well known in San Francisco, autos, trucks, construction equipment, garbage trucks, power tools, and our beloved new diesel buses purchased from General Motors for the princely sum of about $38,000 each. If you listen carefully, you may even hear them roaring along the streets outside the Jack Tar Hotel. Not so well known in San Francisco is the fact that some of our new high rise buildings in San Francisco add considerably to the outside noise level because of the machinery necessary for their controlled interior "environment"!

There is little sense in screaming enforcement since our local enforcement agencies are already spread too thin. Maybe too much reliance is placed on local enforcement agencies and not enough on a federally supported information program to encourage compliance. When a local agency—such as the Municipal Railway is unable to correct the noisy new diesel buses because of General Motors' poor design, how can you expect others to comply with laws and regulations?

We would recommend that EPA immediately contact manufacturers of helicopters, buses, garbage trucks, jackhammers, air compressors, other construction equipment and request them to reduce the operating noise level of items they manufacture.

Although outside your jurisdiction, we would also suggest that the State use part of the Environmental Fund collected from special personalized motor vehicle license plates to encourage owners to abide by noise control regulations. This could be done by a continuing campaign to remind owners to get a regular vehicle check-up and reduce horn blowing except in emergencies.

We would like to help formulate the scope of the $145,000 study you recently contracted for with Wyle Laboratory, El Segundo, since it will consider transportation and urban noise. Later an opportunity for citizen organization participation and review of preliminary stages of the study should be provided.

Thank you for the opportunity to appear before you today.

Mr. Storm Goranson (Private Citizen): My name is Storm Goranson. I live in Oakland, and I am an engineer by training and trade. I wish to make several comments and I shall endeavor to make them as brief as possible.

Comment 1

My first comment is a question asked of this Hearing Board for everyone's consideration. Why is it that in a country in which the population is more than half women, there is not a similar proportion of women on this hearing board?

Recommendation 1

That all people here seriously consider this question and that all the people here do all in their power to resolve this inequality.

Comment 2

There is a new noise polluter that is rapidly increasing in the urban environment, the automatic car washer. On the corner of 14th and Harrison in Oakland is a "Bubble Machine" car wash that is owned by Standard Oil Company. My bus stop is right next to this car wash and the noise from it, when it is washing cars, is truly unbearable to me. If I have to wait for the bus for a long time, I make it a point to go to another bus stop. In fact, the noise is very loud across 14th Street from this car wash.

Recommendation 2

The federal government should set maximum permissible noise limits to regulate and eliminate noise from stationary sources. Since there is no essential function that is fulfilled by these car washes, I suggest that the federal government encourage cities to eliminate and prohibit these automatic car washes from the urban environment.

Comment 3

Like many other homes in the urban environment, ours is located between two freeways: Highways 17 and 580. It is approximately one mile from each of these highways to our home. The continuous noise coming from these freeways sounds much like the ocean only more intense and continuous. During peak traffic flows, this continuous noise is increased to a loud, continuous *roar*. This noise can only be escaped by staying in our house and closing all of the windows. This, as you would agree, is no way to spend one's life.

Recommendation 3

Needless to say, the automobile is one of the main sources of noise, and it is difficult to totally eliminate from our present urban (RUSH-RUSH) environment. I recommend that the federal government encourage and assist in the development of mass transportation systems that all citizens will be able and will desire to use. Such mass transportation systems should be free or, literally, nearly free; this would definitely encourage the use of such systems, thus eliminating much of the peak rush hour traffic and, surely, reducing normal automobile traffic.

Comment 4

Another major noise polluter is the airplane. Frequently aircraft landing at the United States Naval Air Station in Alameda fly over our home. The noise created by these aircraft definitely disturbs us at times. Just the other evening, I was out walking in my garden, seeking solitude and tranquility, when a large airplane went over our house. Obviously I was not able to find the solitude I was seeking. Another aircraft noise created in our area is the local police helicopter. I am continuously aware of this helicopter's presence by the chop-chop noise that it makes. This, too, is disturbing. Another noise source that I don't need to describe is the airport.

Recommendation 4

Combustion engine aircraft such as helicopters should have noise mufflers. For noise problems caused by larger aircraft and noise problems near airports, I recommend that the use of larger aircraft be discouraged, and that use of railroads be encouraged. An increase in the use of railroads would reduce the number of people affected by aircraft noise, and if enough people used railroad trains, the rates could be easily reduced to a level lower than the rates for aircraft.

Comment 5

About two months ago, I had the opportunity to hike into some hills in Montara, California, quite near Highway 1. When we had walked in about a mile from the highway, we entered a valley that was shielded from the highway by a hill. There was silence. It was really a strange experience, after living in Oakland for the past year, Chicago the previous year, and San Francisco the previous three years. I am so accustomed to a high noise level that, encountering the silence was quite a memorable experience to me. At first the silence seemed like a roar. Then I realized that it was difficult for me to get used to silence. I felt speeded up, uneasy. I realized that there is a definite relationship between noise and the speed trip that those of us who live in the urban environment are on. It was really *wonderful* to have that hour of silence.

Recommendation 5

The federal government should fully recognize the problem of noise, its detrimental effects on the quality of our lives, and they should take immediate and long-range actions to solve these problems, and implement by recommendations.

I thank you for the opportunity to express some of my opinions.

Colonel (Ret) JOHN REAGAN (Private Citizen): Mr. Chairman, Ladies and gentlemen—This has certainly been an interesting hearing and we have learned much about noise and its effect. I am pleased to note the interest in aircraft noise. This is my subject but in a different context.

I want to state for the record that I am categorically opposed to unnecessary aircraft noise. However, as a pilot I'm a realist and recognize that there are certain limitations to steps that can be taken to alleviate offensive noise.

Let me ask you the question, "What is the major cause of aircraft noise?" Let's explore this.

There are two distinct modes of flying. They are as different as day and night. One is flying on an instrument flight plan and the other on a visual flight plan. You should be clearly aware of the distinction between the two because the approach to aircraft noise problems under each is different.

On an instrument flight plan the pilot is rigidly controlled from takeoff to landing. He must fly a specific route and specific altitudes. His departure and arrival are controlled. He must report to ground controllers at specified points and cannot deviate from his flight plan without obtaining approval. All procedures he follows have evolved from experience and expertise. The Federal Aviation Agency has established these rules and pilots accept them. It is in their interest and safety that they do. I want to make one point clear. A pilot can fly on an instrument flight plan, if qualified, any time he elects even if the weather is clear and visibility unrestricted. Most commercial airline pilots, for example, file instrument clearances regardless of weather. An instrument clearance can be cancelled at any time if the weather allows.

It is difficult and time consuming to get changes to instrument flight patterns and approaches. This is true because they have evolved from study and experience, by experts in the agencies concerned. They have proved to be safe and are published and generally well known by users. They are more or less standard throughout the world.

Any case to obtain changes in instrument procedures must be based on thorough study by well qualified people. They must be easily implemented and concerned agencies and users must be made to recognize the need for change.

I don't want to throw cold water on the plans of people who want to have changes made in instrument procedures, but the facts should be well understood. There are things that can and should be done to cut aircraft noise. They are appreciable:

1. Have cleaner and quieter aircraft engines. The DC-10 is an example *yet* it is still noisy when overhead.
2. Have steeper glide angles on instrument approaches to airports.
3. Rerouting of aircraft departures, airways and arrivals when feasible.
4. Legislative action as appropriate and,
5. Citizen pressure when, and only when, the citizens have a concrete, realistic proposal to change procedures that create offensive aircraft noise that has been prepared by people experienced with aircraft flying problems.

What I'm saying, ladies and gentlemen, is that it is difficult to change instrument flight procedures. It can be done but everyone should be aware of the problem involved.

Flying under visual flight rules is a different ballgame. The majority of pilots flying small general aviation type aircraft do this type of flying. This means that the pilot elects to fly under rules that apply when it is expected that the weather will be generally good. There are certain specified rules and regulations that pilots must abide by but they are not confining. The pilot is in many respects on his own. The majority of flying in the United States is under visual flight rules.

To understand visual flying one must understand the psychology of pilots—and here I'm using this in the broadest of terms to mean the attitude of many, if not most, pilots. A pilot is trained under certain rules and obtains his pilots license after passing certain tests and shows his proficiency. He generally keeps this—but flying is different from anything else. There are no clear cut roads in the sky, no police as such, no stop signs. The pilot is like a bird. He can soar in his aircraft and has freedom. When he is airborne he has shaken the shackles of the earth. It is a glorious, wonderful feeling. It's different. I've seen people driving cars too fast, not obey traffic laws, not stop at stop signs and drive where they should not. There are good drivers and bad ones. This applies to pilots in varying degrees. When a pilot sits in the cockpit of his airplane he is concerned primarily with that airplane, his safety and, of course, the safety of any passengers one may have. The cockpit is generally relatively quiet and the pilot's hearing is muffled by a headset. Frankly, I don't think he realizes that the noise his aircraft generates can be offensive to people on the ground. He has never really been made aware of this. There may be a few pilots who just don't care, but I don't accept this for the majority. I feel it is the psychology of flying and that pilots are not aware of the people on the ground who are affected by the noise of their aircraft.

For example, let's take the airline pilot who, when the weather is good, cancels his instrument flight plan and is cleared by the tower to land at his destination. If in expediting his landing he turns over built-up, residential areas—does he really think about the people on the ground and the discomfort his airplane noise might cause them—I doubt it. His concern is probably with safety and rightfully so, the completion of his flight and convenience—the shortest way in "Getting the horse home to the barn."

How about the private pilot who takes off from Airport X. This could be any airport in the United States. The weather is beautiful. He has asked for and been granted permission to fly locally under visual flight rules for two hours. Once he is airborne and away from airport traffic, he is more or less on his own until he requests and is granted permission to land. There are, of course, certain regulations he is expected to abide by, such as no acrobatics over built-up areas and maintenance of certain altitudes. But in his two hours of flying, he more than likely will fly over some built-up residential areas. The people down there look like ants and probably he feels enjoy seeing aircraft. Does he really think that the people down there may object to the noise his aircraft makes. I doubt it very much.

There is no excuse for pilots to fly low or even medium low over built-up residential areas unless they are in well established traffic patterns and something should be done about it.

I'm Vice Chairman of the Foster City Noise Abatement Committee. We have a severe aircraft noise problem. I volunteered for this because our noise situation can and should be alleviated. Aircraft noise can be alleviated. It cannot be eliminated as long as aircraft fly. We are completing a detailed study with recommendations to assist our situation. A copy of this will be given to the Environmental Protection Agency here to be forwarded to Washington. Suffice it say that our city, which is adjacent to the San Francisco Bay, is under the instrument approach pattern of aircraft landing to the northwest at San Francisco. 93 percent of all aircraft landing there do so in this direction—14,000 aircraft a month. We recognize that it is difficult to change instrument procedures but have elected to go this route as it is the only way we can really get relief. About 90 percent of the weather at the

San Francisco Airport allows visual approach procedure that would cause aircraft to avoid flying over our city. Just four days ago, last Thursday, I found out that this had been cancelled. No agency, no person, had the courtesy to tell us officially, although our city had been in on the agreement and it had been publicized. I can't give the full reasons because I don't really know. Our problem can be solved. Regardless of instrument or visual conditions, if pilots would just fly the right side of the localizer course of the northwest approach to the airport, it would give our residents much needed noise relief. I'm sure the pilots are competent enough to do this and if they are made aware of the discomfort their aircraft noise causes thousands of people, I feel they will. This is a particular, but what I've said here this afternoon is applicable.

Ladies and gentlemen, I hope you get the picture. We need to change the psychology of the pilot. Awareness of what aircraft noise does to people on the ground must become a part of pilot training so that future pilots will have this awareness. For those who are already flying, they must be made to understand and accept responsibility for aircraft noise and know how to alleviate it. This can and should be done through a program at all levels—airlines, airports, flying associations and organizations and other such groups—emphasizing the necessary awareness. We can take other measures but in the long run must of our correctable aircraft noise problems will be solved this way.

I asked a question at the beginning—"What is the major cause of aircraft noise?" I'll give you my answer—it's the PILOT.

Dr. R. W. **Procunier** (Stanford Committee for Environmental Information):

Infrasonic Noise Pollution

There are times when the atmosphere may seem quiet to the ear, but at the same time infrasonic frequencies may be present.

Infrasonics concern sound of frequencies below the normal hearing range, i.e., 20Hz (cycles a second) or fewer. Infrasounds come from a number of sources, natural and artificial. Some are explosions, aircraft, construction machinery, earthquakes, aurora turbulence. Due to their long wavelength, infrasounds are not effectively attenuated by ordinary acoustic absorbers and hence propogate over long distances. For example, the Krakatoa volcanic eruption in 1883 generated infrasonic waves that were recorded on instruments as they propagated twice around the globe. At low levels, pressure variations are unperceived by humans at infrasonic frequencies. At higher levels the sound is perceived, both by auditory and non-auditory sense organs. For frequencies as high as 100 Hz, sound of sufficient intensity can enter the body by direct absorption through the surface and the physiological effect is essentially similar to that of whole-body mechanical vibration. Physiological responses often are selective to a frequency, suggesting mechanical resonance of elastic substructures within the body.

R. W. B. Stephens of the University of London has suggested that there is a connection between infrasound and degradation of human performance. Recent experiments have indicated a correlation between naturally occurring infrasonics and selected behavior. Astronauts have been exposed to infrasound that simulates booster rockets and have been found to perform simple mental tasks, such as arithmetic, less well. It also has been known that persons do not perform at the peak of their ability during storms, and one possible explanation is the exposure to associated infrasound. An attempt to show a correlation between absenteeism and automobile accidents and infrasound produced by remote weather systems in areas of good weather has not shown significant trends.

It is interesting to note that minimum audible pressure thresholds of hearing have been measured in the infrasonic range. Standards have been set down to 1.5 Hz, which is 132 decibels above the minimum threshold of 0.0002 dynes/cm^2. All subjects examined find the stimulus unpleasant at the lower frequencies used and have difficulty discriminating between auditory and tactile effects. It is suggested that at this frequency the subject may have had difficulty in distinguishing his own heart beat from that of the sound source.

Annoyance created by infrasonic frequencies is of some concern because of the powerful low frequency sound sources emanating from engines of various kinds. Aircraft, diesel locomotives, cabs and other transportation systems are strong sources of infrasound, as are certain kinds of garden, agriculture and construction machinery. Civil engineers have found on such structures as towers and bridges that vibrations, when coupled with atmospheric pressure effects, must be considered for the comfort of workers. Particular structures, such as the new Firth of Forth bridge in Scotland, have been notorious in this respect with work being abandoned at several stages of construction. Tolerance criterion for transverse vibration suggests the body is most sensitive and most subject to possible damage in the 4 to 8 Hz range. This may be due to the internal resonances suggested earlier. It is not clear how the ear, closely tied as it is to bodily stability, reacts at these low frequencies.

It is known that subjects have experienced kinds of nonauditory sensations when exposed to infrasound. These include feelings of nausea, disequilibrium, disorientation, headache, lassitude and blurring of vision. Although these short-term effects have been recorded, long-term effects of repeated exposure are not known. What is more, it often is difficult to obtain data about the nature and extent of infrasonic sources since they are not apparent in the way ordinary audio sound sources are.

Monitoring infrasonic sources requires unique detection devices. At the Palo Alto Research Laboratory, we have developed detectors that consist of acoustic resonators in the near-infrasonic range. Acoustic resonators have a limited frequency response but when background noise varies with frequency, this is an advantage. The relative amplitude at five detector frequencies (octave spaced, 1 to 16 Hz) can be determined by direct comparison in this system. An improved signal-to-noise ratio is achieved in conjunction with correlation techniques, and sensitivity is improved for weak sources. Determining the frequency content of an arriving signal also has the advantage of aiding in identification of the signal. In the 1- to 16 Hz range of sensitive adverse human response, relative amplitudes can be used as an index of discomfort.

A spaced array of detectors enables calculation of the direction of the wave source. Historically, this has been used in wartime for the long-range detection of gunfire and other large-scale detonations. In our program, we have observed natural sources associated with the aurora borealis or "northern lights." The bow wave associated with the motion of auroral forms can be observed as a surface pressure variation with most of the energy in the infrasonic range. We have been the first to make observations above 1 Hz with a frequency selective detection system, and hope to contribute to the understanding of how acoustic waves are generated during aurora. We also have observed artificial sources at spaced intervals in the upper atmosphere during meteorological rocket experiments.

Much remains to be done in the study of infrasonics. The generation, propagation, presence and interaction with the human environment are not yet understood. One of the first things that must be done is to make everyone aware of the potential danger and inconvenience of exposure to infrasound. This must be followed up by government interest with research into techniques of monitoring and control.

Mr. MICHAEL L. MORIARTY (Private Citizen): Ladies and Gentlemen:

I am pleased to have the opportunity to present my ideas regarding the form of noise pollution that most annoys me and other Alamedans, the Naval Air Station, Alameda, California. Not that this is the only noise that assaults the Alamedan's ears, however. But it is one of the prime offenders in the Oakland-Alameda area.

It seems that the NAS Air Rework Facility has the responsibility of testing jet engines to be used in naval aircraft. I, of course, will admit that said engines should be efficiency-tested periodically with as little noise as possible. The Navy has informed me on several occasions that they conduct their engine testing only during the week and then only between the hours of approximately 8:00 a.m. and 3:30 p.m. I do not feel that this is true, however. In fact, engine testing is conducted presently any day of the week and between the hours of approximately 5:00 a.m. and 11:00 p.m., without regard to the peace of the citizens within the area. My wife and I were particularly incensed Sunday a.m., Sept. 12, at approximately 7:15 a.m. when we were abruptly awakened by totally unnecessary Naval Air engine testing at so early an hour.

I have written to Alameda's Congressman, The Honorable George P. Miller, on two or three occasions, but have never been fully satisfied. Letters to the Commanding Officer of the Naval Air Station have even been less fruitful.

Frankly, the sound emanating from this testing facility is extremely noisy and disruptive of one's tranquility. Furthermore, it is an arrogant display of the U.S. Navy's disregard of the peace of the citizens who live near the Naval Air Station.

The NAS also launches a second type of evil (pollution), namely their jet "fighter-bomber" which circle over the densely populated area two or three days per week. These planes are not only obsolete, but extremely noisy and the erratic crash of any one of them could result in several deaths and high property damage. Approximately two years ago I wrote to the Commanding Officer regarding his "weapons system" and the inordinate amount of noise and hazard that it created. I believe that I told him that most of the "hardware" at the NAS was now obsolete and fully known to an enemy attack system. The CO's answer seemed to suggest that I was "unpatriotic" as I questioned the efficiency of the system as well as the need for it in this "push-button" era.

In summation I say that the Navy should arrest the noise created by their engine testing to the extent possible and that the Commander, whom I believe chose not to send a representative to this hearing, should restrict the testing to the generally noisy hours of 8:00 a.m. to 4:00 p.m.

You may ask why I have not mentioned the extremely high level of noise created by commercial aircraft leaving and approaching S.F. International and Metropolitan Oakland Airports. I can only say that the level of this noise is extremely high also but some relief may be in sight if federal noise abatement standards are finally enforced.

Thank you for your attention.

Environmental Protection Agency

PUBLIC HEARING ON STANDARDS AND MEASUREMENT METHODS, LEGISLATION AND ENFORCEMENT PROBLEMS

TUESDAY, SEPT. 28, 1971

The hearing was reconvened, pursuant to recess, at 9:15 a.m., Dr. Alvin F. Meyer, Jr., Director, Office of Noise Abatement and Control, Environmental Protection Agency, presiding as Chairman.

PANEL:

Robert Alexander Baron, Citizens for a Quieter City
Dr. Charles Dietrich, Bolt Beranek & Newman
James L. Hildebrand
Henry Martin, Society of Automotive Engineers
Sheldon Plager, University of Illinois Law School

PROCEEDINGS

Dr. MEYER: I hereby call to order the third sitting of the Environmental Protection Agency's public hearings on noise and noise control being held by the Administrator of the Environmental Protection Agency, Mr. William D. Ruckelshaus, under the authority of Title IV, Public Law 91604.

Many of you here were here yesterday. I will not reiterate in great detail the purpose of these hearings. But for those who were not, let me state that they were required by the Congress as part of an information-gathering activity to assist in the development of a report to the Congress to include recommendations relating to the control of noise as an environmental problem.

At the outset, before undertaking listening to testimony from a variety of distinguished witnesses, let me state that yesterday we had a variety of excellent statements including those by private citizens with deep and abiding interest in environmental problems, that of a United States Senator's official representative, a mayor, the president of the San Francisco Board of Supervisors, and the members of city and county governments, and representatives of citizens groups and other institutions.

This testimony reflected views as to the effects of noise and its importance as an environmental problem and provided to the Panel and to myself, as the Director of the Office of Noise Abatement and Control, some constructive recommendations as to what can be done and what should be done.

Also, it provided—certainly to me, and I am sure to the Panel and to those who were in the audience—tremendous insight to some of the frustrations that citizens and also their elected officials find with certain of our institutional arrangements.

And lastly, of course, of great importance to the Environmental protection Agency were the many expressions of expectations as to what our role is or should be. And I am sure that today we will have an equally fruitful session.

Before presenting our first witness, I would again like to introduce the distinguished panel members who are serving with me to assist in this very important task.

Mr. Robert Alexander Baron, author, head of Citizens for a Quieter City, of New York City. Mr. Baron.

Dr. Charles Dietrich of the world renowned firm of Bolt, Beranek, and Newman.

Mr. James L. Hildebrand, lawyer, author of an outstanding text concerned with the legal aspects of noise, entitled "Noise Pollution and the Law."

Mr. Henry Martin, a representative of the Society of Automotive Engineers, and a distinguished worker in this field.

Dr. Sheldon Plager, professor of law at the University of Illinois Law School, and a member of the Governors' Council on the Environment.

Dr. Karl Kryter, I hope, will be able to be here later today. Dr. Kryter suffered an accident over the weekend. When I talked to him last, he was hopeful that he could be here if his doctor would permit.

Without further ado, now I should like to undertake the third sitting of this hearing, and invite Mr. Meyer S. Bogost, who is an environmental engineer with the Governor's Council of Environmental Quality of the State of Hawaii and a longtime associate and friend of mine.

Mr. Bogost, would you come and join us and let us hear from you.

STATEMENT OF MEYER S. BOGOST, STATE OF HAWAII

Mr. **Bogost**: Dr. Meyer, members of the Panel, and ladies and gentlemen:

I am very happy to be here. As he said, I am an old friend of Al's. We have known each other quiet a few years, and he was almost my boss besides that. I somehow sneaked out of that.

I would like to just give you a little brief history of what has happened in Honolulu and Hawaii before I go into my formal talk. It will only take just a minute or so.

Actually in Hawaii we started on noise control in 1967 when the mayor of the city appointed a committee on noise control. This committee was called the Mayor's Committee on Noise Control, and was especially set up to set up—establish some ordinances which might have been adopted by the City and County of Honolulu.

Unfortunately, the committee never got to the point of producing any legislation for the city to work on. And, as a result of this, the state legislature decided to get into the act in 1970. And they did produce two laws which had—which dealt with noise control. One was called Act 147, and this act was established after many hearings were held in the City and County of Honolulu.

The legislature approved this act, and the Governor signed it, and it had several main provisions.

The first one was that it gave authority to the Department of Health to make the regulations concerning noise. And, second, it provided that the Department of Health may actually produce regulations for the various counties of the State of Hawaii to adopt.

Some of you may not realize that, in Hawaii, we have an unusual form of government in that the counties each consist of a separate island. So each island has a different problem, you might say. And on that basis the legislature did provide for each island to promulgate its own peculiar laws and rules and regulations concerning noise because of its own particular situation.

And then this law also provided for the formation of advisory committees in each county which would aid the Health Department in producing their regulations.

The advisory committee, which was appointed by the Governor, decided that there were many problems concerning noise, but the one that concerned most of the people was the excessive vehicle noise in the City and County of Honolulu. And because there was no real expertise on noise in general, they decided that they would work on this first. So, after about 10 months of meeting on a weekly basis, they did finally produce a set of regulations which were given to the legislature for adoption.

And the result of this was that the legislature did decide finally to work almost exclusively on vehicular noise at first and see what could be done about that. And this is the present status.

Now that's just a little brief history before.

My name is Meyer S. Bogost, and I am the environmental engineer in the Hawaii State Office of Environmental Quality Control. The interim director of our office, Dr. Richard E. Marland, was originally scheduled to present this statement but because I also had conferences here on Environmental Education matters for Hawaii, Dr. Marland asked me to deliver this testimony on behalf of our office.

I am pleased and honored to be here and to be able to participate in these exploratory hearings on Noise Pollution. I know that I will learn much about this relatively new concept of pollution of our environment.

Certainly, I do not claim to be an expert even though I am 2,000 miles from home and among some strangers. In fact, knowing my limited capability in this field, I wish to give credit for most of what I am about to say to the one person in Hawaii who probably knows more about noise than anyone else. This truly designated expert is Dr. John C. Burgess, Professor of Mechanical Engineering at the University of Hawaii. He has given me permission to quote from testimonies he has presented earlier this year to the Hawaii Legislature and to the Advisory Commission on Noise Control for Hawaii. Dr. Burgess summarized the problems of noise control in Hawaii as follows:

"1. Noise is the third most important pollutant in Hawaii at this time, ranking next after air and water pollution in its potential to cause deterioration in, or to destroy, the quality of life.

2. There is no escape from paying the cost of noise. We shall pay either in terms of dollars for noise control, or we shall pay in terms of psychic and physical distress.

3. The noise sources operating in Hawaii and those operating on the mainland are the same.

4. Hawaii's ideal climate allows and encourages the design of living spaces to take maximum advantage of tradewind weather. The resulting open and light-weight structures do not provide the degree of noise reduction for interior spaces typical of mainland structures.

5. Noise standards developed for urban areas on the mainland generally appear to take into account the closed and heavy-weight structures required by mainland weather conditions. Such standards should be carefully reviewed before allowing their application without modification in Hawaii.

6. The Federal government is becoming increasingly active in its concern for noise, and is currently developing standards for noise emission and noise control. The coordination between government agencies in Hawaii and those on the mainland does not appear adequate to provide for Hawaii's unique requirements.

7. Two paths toward noise abatement are currently being followed in Hawaii: regulating emissions from noise sources, and shutting up and air-conditioning living spaces.

8. Hawaii's current operational capability to deal effectively with the problems of noise is not adequate. An appropriate goal is to develop in each concerned State and local governmental agency sufficient expertise to deal effectively with the normal operating problems relating to noise and its control.

9. The Administrative framework, the trained body of enforcement personnel in the various departments and the coordinating body required to properly evaluate the environmental impact of noise as a pollutant in Hawaii have yet to be developed. The initial problem of establishing specific areas of responsibility, of developing operational procedures, of staffing, and of recommending on priorities should be considered. The Office of Environmental Quality Control might be an appropriate State agency to do so.

10. The rate at which noise in Hawaii is brought under control depends vitally upon the rates at which funding and trained personnel are made available to the agencies having responsibility for doing so."

Noise is the third most important pollutant in Hawaii. It ranks after air and water pollution in its potential to interfere with or to destroy the quality of life that attracts permanent residents and visitors to this State. In common with air and water pollution, noise is an unwanted byproduct of the highly industrialized life which characterizes our country and, increasingly, our State. In distinction with air and water pollution, the standards for what constitutes excessive noise and the mechanisms for enforcing such standards are still in a state of early, rapid development. In addition, we have very little factual information concerning levels of noise existing in various areas of the State compared to the amount of factual information available concerning air and water quality.

There are three principal effects of noise on people. Although these effects often occur simultaneously, the effects can be separately identified. They are (1) physiological damage to the hearing mechanism, (2) interference with vocal communication, and (3) annoyance. Physical damage occurs at fairly high levels of noise and is dependent not only on the noise level but on the length of time a person is exposed to it. Speech interference occurs generally at medium as well as high noise levels and is dependent not only on the ambient noise level but on the distance between speaker and listener and how powerful a voice the speaker has. Annoyance can occur at all noise levels and is dependent, in part, on the psychological and physiological state of the listener.

There is no escape from the cost of noise. If we accept as fact that noise levels at our ears are already too high, then there will be a dollar cost for reducing present and future sound levels emitted by various sources, or a dollar cost for construction designed to reduce these sound levels before they reach our ears. In either case, there will also be the dollar cost for the requisite administrative and enforcement effort. All of these dollar costs will ultimately be shared by all of us as residents of Hawaii. If we argue that we can acclimate ourselves to increasing noise levels, and that noise abatement procedures cost too much money, then we shall still pay the cost, in terms of decreased quality of life, psychic distress, and even physical damage for hearing. Whichever way we turn, the cost is there, and we shall pay it.

Hawaii is more fortunate than most other areas of the country with respect to many of the aspects of life which enhance its quality. With respect to noise pollution, however, Hawaii is less fortunate. We have the same noise-makers that everyone has. Our trucks, airplanes, motorcycles, construction equipment, rock bands, hi-fi systems, and transistor radios are just as loud as those on the mainland. But our way of life has been geared to a climate that invites us to keep our windows open every day of the year.

It is uncommon in the United States to have a year-round climate that does not require structural protection against either cold or heat. In climates that do require such protection, there is a bonus for the dweller from the standpoint of noise. Closed, heavy-weight structures attenuate outside noises significantly. Buildings erected in Hawaii have not usually provided this protection, although there is increasing pressure on builders to provide structural protection against noise by closing up the living spaces and using central air conditioning to replace the tradewinds. Many Hawaii residents today, living in apartments designed for open-air living, are closing them up and installing air conditioning units—not for climate control, but for noise control.

Most of the published noise standards and codes originate in areas that are cold most of the year. Although I have not seen any references which state explicitly that the structural characteristics of buildings in cold areas have had an effect on the noise levels set as emission standards in such areas, it is difficult to escape the conclusion that this is and will continue to be the case. The importance of this observation is that such standards, if imposed on Hawaii, can interfere with our efforts to provide a quality of life appropriate for Hawaii. Not only do many of Hawaii's residents prefer to live in close companionship with our mild environment; the success of our tourist industry is fundamentally based on our ability to offer such an experience to our visitors.

An example of standards which might be set at the Federal level which could cause difficulty in Hawaii is suggested by "The Noise Control Act of 1971", submitted to the Congress by the Administrator of the Environmental Protection Agency in February, 1971. This bill, if enacted, will empower the Administrator to set noise generating standards for construction equipment, transportation equipment (including recreation vehicles and related equipment), and equipment powered by internal combustion engines. Subsection 6(d) of the proposed bill states, in part, "No State—shall adopt or enforce—any standard—different from the standards prescribed by the Administrator." The section goes on to state that a State's right "otherwise to control, regulate, or restrict the use, operation, or movement" of products covered by the bill shall not be diminished or enhanced.

The products covered by the proposed Noise Control Act of 1971 are those which govern the ambient noise levels in an urban area. If such standards are set at levels suitable for areas where dwellings are closed to the outside environment most of the year, we can expect that they might not be suitable for Hawaii's year-round open-air environment. The choice that would appear then to be open to us is either to accept the noise levels so created, or to exclude completely or for certain time periods all vehicles which create noise levels higher than those we feel are acceptable in Hawaii. The point is that action is being planned on the mainland that has the potential to affect significantly the quality of life in Hawaii, and that standards now being considered are almost certain to be based on noise control experience in a cold climate. Hawaii's unique problems relating to noise and its effects on the style of life we wish to protect should be made known to those who will prescribe standards at an early enough stage to be effective. We might also consider suggesting appropriate changes to the Noise Control Act of 1971. In either case, we must improve the effectiveness of our coordination with mainland activities.

If we elect to pay for noise in terms of dollars rather than in psychic and physical distress, the next question is how to proceed.

In this, Hawaii has already started. Two bills introduced in the Fifth State Legislature, Regular Session of 1970 have been signed by the Governor and have become Acts 146 and 147. Act 146 mandates the Department of Education to plan for and request appropriations as necessary for adequate noise control of both new and existing schools.

As written, Act 146 states that "The Department of Education shall develop criteria for deciding whether acoustic noise control and air conditioning of existing and new school facilities are required for effective classroom instruction." This statement appears to have misled some people to believe that the department cannot take action until studies have been made upon which such criteria would be based. Such is not the case. In its original form, the Bill (H.B. No. 1900-70) provided interim criteria specifically to allow the department to take action without waiting for a study of criteria. In deleting these interim criteria from the bill, the House Committee on Finance stated, in part, ". . . . the Department of Education and the State Comptroller shall adhere to the criterion that the sound levels in a classroom shall not exceed 55 dB(A) more than ten percent of the class time from class activities within the classroom."

The Legislature has thus very clearly stated its desire that there be no delay in providing protection for students against interference by noise in the learning process, that specific interim criteria shall be used until permanent criteria are adopted. The fact, however, that the act has been misinterpreted, and that a study has been proposed on the basis that the Department of Education cannot proceed under Act 146 until such a study has been completed, indicates that clarification of the legislative intent might be helpful.

Act 147 mandates the State Department of Health to establish noise regulations for the State of Hawaii.

With these two acts, Hawaii has set in motion both the process by which structures are designed to attenuate noise from outside sources, and the process by which the noise emitted by those outside sources is regulated. Both of these are important, but only emphasis on the latter will allow Hawaii to retain its "tradewind" quality of life.

There are many agencies of State and local governments in Hawaii that are concerned with noise. Among these are the State Departments of Transportation, Health, Education, Accounting and General Services, Planning & Economic Development, to name a few. Among the Departments of the City and County of Honolulu are the Planning, Building, and Police Departments. Of those mentioned, only the State Departments of Health and Transportation are currently to my knowledge, developing their capability in these areas.

To meet the requirements for monitoring, for advising on environmental impact of proposed activities and capital investments, for enforcement, for recognizing what are the problems unique to Hawaii, and for effective coordination with Federal authorities, each of the agencies named, as well as others in Hawaii, will require some level of in-house capability in noise and its control. The appropriate level could vary from one individual concerned only on a part-time basis with noise to a section of several people concerned on a full-time basis.

As already mentioned, the State Department of Health is charged with the responsibility of developing standards for and regulations governing excessive noise. The mechanisms by which these regulations shall be enforced, however, are not completely clear. Act 147 states, in part, that "all county health authorities, sheriffs and police officers, and all other officers and employees of the State and every county thereof shall enforce the rules, regulations, and orders of the (Health) department." Thus no organization has yet been specifically identified by the legislature as responsible for establishing enforcement procedures and for establishing administrative and training guidelines for enforcement personnel.

Since we are starting from a condition in which enforcement capability is nearly nonexistent, we must do more than just add a few people with the ability to read sound level meters. We might well consider the entire system from the establishment of regulations through to the application of penalties to violators. For many noise situations, it is possible to separate the functions of establishing the existence of a violation and of apprehending the violator. "Hot pursuit" of violators may not be necessary in all cases, and the selection of instruments, the methods of detection, and the degree of training required by operating personnel could be determined on the basis of minimizing overall costs.

In addition to the standard problems that many of the operating departments of State and local governments will experience, we can expect to have a number of problems for which there is insufficient readily available information or for which standard solutions have not been developed. Some of these will be unique to Hawaii, and some will require coordination with sources of information and research effort on the mainland and in other countries. In addition, many of these non-standard problems can be expected to be interdisciplinary and interdepartmental in nature. Perhaps an example or two will illustrate what I mean.

In developing regulations for motor vehicles in Hawaii, the measured sound levels generated by automotive traffic on mainland roads has been used as a guide. Preliminary measurements made in Hawaii show surprisingly higher levels. A tentative explanation, not yet proven by appropriate experiments, is that the road surfaces in Hawaii are much rougher than those for which measurements were made on the mainland. Since current plans for setting permissible levels for noise emissions from automobiles in Hawaii is based on the noise emitted from the interaction between tires and road surface, a low-noise emitted from the interaction between tires and road surface, a low-noise road surface would be a distinct advantage. However, a low-noise surface is generally a fairly smooth one, and smooth surfaces do not provide the best traction under wet conditions. Thus an appropriate specification for road surface texture cannot be provided on the basis of existing information.

Another example involves the multiple interactions between noise, public health, and the economics of locating major transportation terminals and routes. It is necessary to drive only a short distance along the Lunalilo Freeway to see many examples of apartments with jalousies located within fifty feet of the nearest lane of traffic. Measurements made inside one such apartment in Kaimuki showed sound levels to be between 70 and 85 dB(A) during most of the daytime and evening hours. At a level of 70 dB(A), a husband and wife twelve feet apart must shout to understand each other; at a level of 85 dB(A), they must get within three feet of each other and still shout. Among the questions that should be asked are those concerning an acceptable noise environment in our homes. What happens to the relationships between husband and wife when a high noise environment impedes their verbal communication? What happens to children if they are deprived of vocal communication with their parents because of a high noise environment? Other questions involve the interactions among noise regulation, zoning, and land acquisition along proposed transportation routes. In all of these, there must be a trade-off between the tangible costs of regulation, low-noise hardware, right-of-way acquisition, and changes in land values, and the intangible costs that an increasingly noisy environment exacts in terms of mental health, family relationships, and community welfare.

These examples show that a need exists for the development of a center within the State having the capability to investigate problems relating to noise, the processes of its generation, transmission, and reception, and its effects on people. One of the center's principal functions would be to provide specialized long-range assistance to the operating departments of State and local government agencies in their problems with noise and its control. It should specifically become conversant with the problems unique to Hawaii. Another important function of such a center would be to provide opportunities for education at the university level in noise and its control for both the young people of Hawaii looking for career opportunities and for those already employed who wish to improve their capability to handle problems involving noise. Such a research center in noise would be financially and administratively independent of the operating agencies of government, although it should be responsive to their needs. It should be required to be cognizant of efforts on the mainland and in other countries as they affect or provide knowledge important to Hawaii in noise and its control. Such a center might be established at the University of Hawaii, where it could interact with all academic disciplines concerned with noise and its effects. It could be operated as a part of, or in coordination with, both the College of Engineering and the Environmental Center.

There is one more important problem facing Hawaii that should be discussed. This is the problem of getting started. With the rapidly developing needs for expertise in noise in many operating governmental departments in Hawaii, some mechanism should be established to fulfill these needs on a planned and coordinated basis. As mentioned before, there is almost no expertise existing in the various departments at this time, yet the problems are here now. Many of the departmental activities can draw upon a common body of knowledge while the administrative framework develops to meet the specific needs of each. It may therefore be appropriate and efficient to establish an organization with the temporary mission of providing the various departments with short-term technical assistance. It might also serve as an initial recruiting organization for personnel who would later find specific homes in operating departments. The organization would have both a short-term and a long-term responsibility to provide for coordination of those problems which are interdepartmental and interdisciplinary. For example, when plans are initiated for a freeway, airport, or heliport, the effects on schools, hospitals, present and future, should be considered. We should know what the costs due to noise will be before the plans become firm, rather than listen to complaints afterward. Such an organization might be most effective if established as part of the Office of Environmental Quality Control.

On August 27, 1971, Dr. Richard Marland (Interim Director of the Office of Environmental Quality Control) testified before the Hawaii State Board of Health on the proposed vehicular noise standards. He stated:

"With respect to the noise limits proposed to go into effect on January 1, 1977, these levels indeed constitute a vast improvement over the current levels being emitted. These are indeed good goals. Their appearance in these recommendations, however, requires a state-of-the-art on vehicular noise abatement which does not yet justify their adoption as standards. Rather, these are predicated on the hope that technology will provide the means of achieving these desirable levels over the next five years. While I recognize the merit of threatening harsh action against violators of pollution laws, it is also clear to me that putting these requirements into a standard at this time is an optimistic gesture which is unwarranted. Indeed, a likely result could be that the Department of Health would be both unequipped and unable to achieve enforcement of these laws. I say again that these should be established as realistic goals and that Hawaii should formally join with other State and Federal authorities in insisting upon improvement in the manufacture of vehicles with respect to noise abatement."

The Office of Environmental Quality Control, in reviewing the status of noise control efforts in Hawaii, still needs clarification on the following:

1. Rationale behind the levels established in proposed Federal standards.
2. State-of-the-art in the application of new devices on older vehicles.
3. State-of-the-art in abatement of construction noise.
4. Federal plans for aircraft noise level control.
5. Recommended techniques for systematic monitoring for noise.
6. Experience in successful enforcement practices.
7. Feasibility of sound-deflecting barriers, including landscaping along urban highways.
8. Federal views on practicality and enforceability of proposed Hawaii standards.
9. Nature of Federal assistance, technical and financial, available to Hawaii and what we must do to qualify for assistance.

Finally, any plan for bringing the third most important pollutant in Hawaii under control will require adequate funding. If we plan wisely, implement carefully, and are willing to pay the cost, we should be able to maintain the open-air, tradewind quality of life that still characterizes much of Hawaii.

Thank you for the privilege of testifying on these matters.

Aloha.

Dr. **MEYER**: Thank you very much, Meyer.

Before asking the panelists if they have any questions or comments in regard to your list of items, I would comment that we intend to provide you with a rather detailed response in writing to these items that you have raised here. I will now ask the Panel if they have any questions.

Starting on the left, Mr. Martin?

Mr. **MARTIN**: Yes. Mr. Bogost, first let me compliment you. In sitting on these panels, you are the first representative of a governmental agency who admitted that he couldn't solve the problem himself.

There is only one question on your testimony. You did mention the fact that they had prescribed or anticipated levels for 1977. Could you just elaborate on what those levels are that were being looked at?

Mr. **BOGOST**: I don't have the exact numbers here, but they involve the reduction of noise from vehicles mainly. Of course, we are speaking mainly of vehicles, and this would require the redesign of engines and transmissions, and—and tires which, of course, is not producing—not in effect right now. And it's a long ways from actually entering the—the—entering—the industry isn't even approaching that now.

Dr. Burgess feels that it is actually possible to reduce transmission noise and engine noise. If, for example, the walls of our engines were made, say, one-eighth of an inch thicker, the attenuation of the noise would be very considerable. But this would add, of course, cost to the automobile itself. And he estimates that this may add as much as 15 percent to the cost of an automobile.

And whether or not the industry wishes to do this, and the public is willing to pay this extra 15 percent to reduce the noise to the levels are required by 1977, maybe this is a matter for education of the public to look forward and accept these increased costs for a vehicle which does have noise attenuation by virtue of thicker walls and also soundproofing inside the engine—rather on the outside of the engine block itself.

Dr. **DIETRICH**: I would like to ask a question with reference to regulations—again with reference to regulations proposed under Act 147.

I understand that hearings were scheduled for July and August on this. Were those hearings held?

Mr. **BOGOST**: Yes, they were held.

Dr. **DIETRICH**: I see. How—What has been done since that time with the proposed regulations?

Mr. **BOGOST**: The regulations are now in the hands of the Director of the Department of Health for his consideration and his action.

In other words, it's up to the Director of Health to adopt regulations in response to the public hearings, whatever happened at those public hearings for or against, or in criticism of or to try to make the regulations maybe more stringent or less stringent.

Whatever was said at the public hearings is all recorded and the Director of Health has the full responsibility of coming up with a decision.

Sometimes it takes him a little while to make these decisions, and that's what we are waiting for right now.

Dr. **DIETRICH**: I see. Could you clarify for me the relationship between Dr. Marland, whom you quoted in your testimony, and the Hawaii State Board of Health?

Mr. **BOGOST**: Dr. Marland is the Interim Director of our Office of Environmental Quality Control. Dr. Marland actually is an EPA man. He is being paid by the Federal government, and he's on loan to our office from the Federal government. He is our Interim Director. He has nothing to do with the Department of Health.

Our office is a function or a part of the Office of the Governor of the State of Hawaii. We are not a department. We don't have a head of a department. We are not a cabinet member, so to speak, although we have the same level of authority. We are strictly a coordinating office between the various other departments within the State government of Hawaii.

Our job is to coordinate between, for example, a Department of Health and the Department of Planning and Economic Development, the Department of Land and Natural Resources, and all other departments.

We have no authority over any other department, except to act through the Governor. We can make a recommendation to the Governor, and he, in turn, will go back to the Department of Health Director and tell them that he thinks so and so.

So our relationship is strictly on a talking relationship. Our office is strictly a coordinating office, and we are not an operating agency. We don't operate anything. We make recommendations to the Governor, who, in turn, will instruct or advise or ask his department heads to do whatever he feels is right.

Dr. **MEYER**: Dr. Dietrich, I think you can read a lot between the lines of what Mr. Bogost has just said as to what that office does for the Governor, though.

Dr. **DIETRICH**: Thank you.

Mr. **BARON**: I want to just understand how the legislation would operate. It would be enacted by the State Legislature and then be—how would it—would it be imposed on the counties and the cities, or—

Mr. **BOGOST**: No.

Mr. **BARON**:—or there would be an operation—

Mr. **BOGOST**: The State Legislature just enacts the law which gives authority to the Director of Health and the Board of Health to promulgate regulations which then, if adopted after public hearings, have the effect of law.

In other words, like—take the City and County of Honolulu. They have—they hold public hearings on noise, and whatever regulations they come up with as far as recommendations to the Director of Public Health, he then has the authority to adopt them. And if the Governor signs the regulations, they become law throughout that particular county.

Then each county has the same privilege. Each county is going to have its own advisory committee on noise. Each will go through their own public hearings with their own advisory committee. Each will listen to its own people as far as what they require. Since our islands are separated by water, one island doesn't affect another.

As a matter of fact, in some parts of some islands, it makes it possible to have a different set of standards for one part of an island rather than in controversy to another part of the island because of the particular geographic and other industry or whatever else might be there. So we feel that we have—we will probably wind up with about two or three sets of standards, which is still in the making, of course, as of the present time.

Mr. Baron: But a county need not adopt them if it doesn't want to? It's like the pasteurized milk ordinance?

Mr. Bogost: If this advisory committee doesn't establish public hearings, for example, which must be held in order to establish the regulation in the first place, if they don't come up with any recommendations to the mayor of the county, nothing happens. The State cannot endorse anything onto the counties that they don't want.

Mr. Baron: One other point. In describing what noise does, the quote here is what I call a—the traditional catechism of about what noise does. And I think that we should start to modify that on the basis of the knowledge we are now getting about the impact of noise.

The last sentence says—you are talking about speech interference level.

"Annoyance can occur at all noise levels and is dependent, in part, on the psychological and physiological state of the listener."

On Page 4. This kind of statement, in my experience, is a kind of statement that interferes with and hampers the implementation of noise law. If you say you have only these impacts and the third is annoyance, because annoyance does not motivate a nation or a society or a city and county to move. And we are discovering that actually—actually I think it would be more accurate from what I know and have heard to describe this as the extra-auditory effects.

Interference with sleeping, for example, which can occur at 45 and 50 dB(A), is certainly more than an annoyance.

Mr. Bogost: In other words, we shouldn't stress the word "annoyance" is what you are saying; that this is hard to implement and to enforce?

Mr. Baron: Well, what I am saying is in defining the impact of noise, I think that instead of saying "annoyances" or amplify the expression of noises. It's my personal opinion—and I would like to hear comments from the Panel—that we are all talking about extra-auditory effects of noise, which have moved to where we are beginning to discover they are more tangible and they would be more damaging than the term "annoyance" would lead us to believe.

Mr. **Bogost**: I see. That's a good point. And I will certainly bring it back to our office.

Mr. **Baron**: The other question on this 1977 standard. I am glad you clarified things correctly. It isn't that technology would not be able to reach a reduction by 1977—whatever that reduction is—there is a question really of cost.

Mr. **Bogost**: Right.

Mr. **Baron**: And I would like to point out that what's happening on the mainland—and I know it's happening in Hawaii—is this new concept of cost, of internalized, externalized costs, and the cost to the environment and to a society and to Hawaii of having noisy vehicles.

So we are trying to not think purely in the traditional dollar costs of noise reduction, but in terms of the total cost of having a noise source which is becoming, as you say, the third most important pollutant in Hawaii.

Thank you.

Mr. **Bogost**: It's true. One thing that I do want to stress again is the fact that we recognize and we feel that the state of the art at the present time is there to cut down noise to an acceptable level, if you want to use that word.

We don't feel that nobody doesn't know how to cut down the noise. It's just a matter of whether or not the industry, that is the producers of the equipment, are willing to put the extra effort in, the extra equipment, the extra materials, and the extra money, into a piece of equipment, whether it's an automobile or a lawnmower. It will cost roughly 15 percent more, and is the public willing to accept that. That seems to be the big problem. Is the public willing to accept the extra cost as a method of control.

Mr. **Baron**: Well, it would seem to me that you are answering that question, describing what Hawaii is doing, assuming that you are doing—you are mirroring what the public wants and that the public does want something to be done.

Mr. **Bogost**: The only thing is that the State of Hawaii, which has less than 800,000 people, does not have much of an impact on industry as far as its requirements for trucks or lawnmowers or can-openers or anything is concerned.

We feel that we have to work with the larger states and the other states in order to get the national standards, for example, set to establish—which will reduce the noise, because more people will want it, not just the State of Hawaii.

If we want trucks with less noise—if we buy a hundred trucks, that's not a lot of trucks. That isn't going to affect the industry. They are not going to make trucks just for Hawaii. But they will for the whole country, if the whole country wants to have the noise reduced.

Mr. **Baron**: If your voice is added to that of the rest of the country, it will be most helpful.

Mr. **Bogost**: We want to scream and make our own little noise, added to all the other things to cut down the original noise of the engines.

Mr. **Hildebrand**: You raised a serious question that perhaps the Federal vehicle noise standards might be inappropriate for Hawaii.

Mr. **Bogost**: Yes.

Mr. **Hildebrand**: And then you also mentioned that particular problem with road surfaces in Hawaii. In your opinion, would our—the other methods for vehicle noise abatement, such as curfews relating to certain kinds of activity and limited access roads, would those be insufficient to—to maintain a certain noise standard that you would like applied in Hawaii?

Mr. **Bogost**: We recognize that these types of things are acceptable to us, and we are working on that basis also. We are hoping that noise levels during certain night hours and other hours of the day would be other than what they would be during the normal day.

Also we are trying to plan the routes of heavy vehicles, heavy trucks, along certain roadways where they wouldn't interfere too much in residential areas. They wouldn't go through residential areas to get to a construction site.

So we do recognize that these types of controls are perfectly okay in Hawaii, the same as anywhere else. It's just that the—the types of things that we can't control, which is the engine noise, the transmission noise, and the tire noise, and this is something that has to be worked on at the national level.

Mr. **Hildebrand**: Thank you.

Dr. **Plager**: Mr. Bogost, let me focus on one aspect of your testimony which I found most interesting. That is the designation in Act 147 of the Department of Health as the agency charged with the responsibility for producing noise regulations. I am curious as to why the Department of Health. As you may be familiar—and I hope I am not embarrassing you by asking you this question, because I gather you are not in the Department of Health. You may be familiar with the history of water pollution. The fact that water pollution control was put in the hands of the Department of Health—Departments of Health around the country probably forestalled effective treatment of the problem for many years. And nothing really was done until it was taken away from Departments of Health.

Why would Hawaii choose to pick that particular department for this role?

Mr. **Bogost**: Well, let me say, first, that I am an old hand with health departments. I have worked for four different health departments beginning in 1938. And the last health department that I worked for was the Hawaii State Department of Health, believe it or not. I did work for them for about eight months.

And one of the reasons why I didn't continue to work for them—and maybe this shouldn't be on the record—but in any case, it sort of backs up what you say. I found the health departments are not too effective in enforcing standards, and I felt that I wanted to work at something which would produce some results.

So I quit working for the health department because I felt I could do more on the outside. Traditionally the Department of Health is involved with pollution, no matter what it is. In the

State of Hawii, it's no different than any other state. The State of Hawaii hasn't yet developed or produced something like a pollution control agency, other than the Department of Health. It just happens that the state law now places the responsibility for all pollution control in the Department of Health. This includes everything—water, air, land pollution, noise. It hasn't—

There has been an effort in the past legislature, for example, a very strenuous effort to remove this responsibility from the Department of Health, and, for example, even place it in our office. We don't want it. But we are not an operating agency, so we didn't want it, and it shouldn't be in our office.

But there is some talk, for example, of developing what California has, an Office of Pollution Control, which is separate from the Department of Health.

In order for this to be accomplished, it has to be done through the State Legislature, which has to remove this responsibility from the Department of Health. And this is a matter for the State Legislature to do.

They tried it in the last legislature. It din't work. Whether they want to go through it again in the next legislature is up to them, and I can't say anything about this except that it is the enforcing of these pollution control efforts happens to be in the State Department of Health, and the legislature isn't about to remove it as of right now. And there's nothing more we can do.

Prof. **PLAGER**: Thank you.

Mr. **BARON**: With the increasing knowledges as to the health effects, the health impact of noise, do you think that there's some reason for, for example, standard-setting or some input from the Department of Health, because of its traditional concern for the welfare of the people?

Mr. **BOGOST**: The Department of Health does have the responsibility for conducting these public hearings, which will eventually result in some regulations and standards. And, of course, anybody and everybody can put their input into this particular public hearing, and this includes the members of the Department of Health as well. They can contribute anything they wish.

And, as I said before, the Department of Health happens to have only one person really who knows anything about noise on their present staff. And as of the present moment right now, there is a freeze on in the country, and this includes the State of Hawaii. The Governor has frozen all new positions in the State, which means that, even though they did very seriously consider hiring additional personnel specifically for noise control, they can't do it right now because the Governor has frozen all new positions in the State of Hawaii.

So maybe when November comes along, and the freeze is unfrozen, the health department may be able to pick up a couple more people in this particular effort.

They do have, though, this advisory committee, of which Dr. Burgess is the chairman, and he is a well-qualified person, as I said before, and his committee is made up of about a dozen people who are also very zealous in their efforts to reduce noise.

And these represent the community at large, the university and everybody—manufacturers, the automotive industry, the trucking industry, and everybody who is interested in reducing noise.

Dr. **Meyer**: I am interested to note that freezes sometimes extend as far as Hawaii in the pleasant tropic climes. I certainly appreciate your very excellent presentation of special problems of one state. Since this hearing is concerned with enforcement and standard-setting and the regulatory activities, I would have to make the observation that, while Hawaii is unique in some ways, some of the same problems of open living do extend into the subtropical and extremely temperate sections of the United States.

Florida, parts of Mississippi, Louisiana, Texas, and Puerto Rico have similar problems. So in setting Federal standards we are going to have to take into account these problems that you have raised with regard to noise emissions from vehicles and transportation devices and construction equipment. The thing which I wish you would take back to Dr. Marland and to the Governor and to Dr. Quissenberry, and the health department, is that we are quite aware that people standing in the open around a construction site or along the highway have the same problems as in New York City, or maybe even worse problems, because of the reverberation effect as people live in open houses in Honolulu.

I feel it necessary to remind you all that the Federal standard-setting role will have to take that into account.

As I mentioned earlier, we clearly will answer all of the points that you have raised here. I won't take the time today, because we have got some 15-odd witnesses to listen to today. But you can rest assured that we will make it—16, 17, then. Or maybe 14. Oh, the witnesses aren't odd. It's the number that may be odd. We can have a little humor in these sessions.

Mr. **Bogost**: One more question over here.

Mr. **Martin**: You alluded to a very interesting comment in your statement just a few moments ago, and I would like to just explore it with you as a State representative.

You said if the people of the State want to pay for the noise. How would you go about getting their decision as to whether they want to pay for it?

We hear from conservation groups and things like this, and, of course, they are—they pay for anything to get noise down. And there are people who wouldn't give a damn if they weren't affected by the noise to spend the money. How would you go about getting this kind of a seal in, say, the State of Hawaii, and whether or not they want to be burdened with the cost of—of reducing noise?

Mr. **Bogost**: Well, I will answer this in a sort of an indirect way. I will quote from my boss again, Dr. Marland.

Dr. Marland feels that there are three phases to our efforts to reduce any pollution. The first is to work on the reduction of existing pollution. The second phase is to reduce or eliminate future pollutions if we can possibly imagine what they might be. And the third is the education of the public to accept the first two.

So it's the education point that's the most important. In other words, we have to work on the people and the general public at large, beginning as of right now, to educate them that pollution control in any field costs something. It's going to cost money.

And, as a matter of fact, as I said earlier, I came to California to attend a conference on environmental education. I happened to have been given an extracurricular job to initiate a program of an environmental education in Hawaii. And these two things happened to work out just right.

Environmental education in Hawaii is going to begin in the sixth grade. And it may take us eight years before we get to the college graduates or something like that.

We are also hoping at the same time to start with the general public as far as the enlightenment into fields of pollution control, and the we are hoping to go into a program of adult education along with our sixth-graders, mainly through television and other media.

So the public will learn from the very beginning, and it may take years to do this. Of course, it may take several years for them to recognize the problem of pollution which they recognize all right, but they are not willing to pay as long as we point out to them what the costs of pollution control will be and this not only includes noise but, of course, includes air, water, and everything else.

So this third phase, as Dr. Marland says, is the most important one. The one that takes the longest and is the most difficult is the environmental education of the public at large to accept the responsibility for the control of noise, control of air pollution, water pollution, and land pollution.

Dr. MEYER: Thank you very much for reminding us of the fact that, while we are dealing in this hearing with noise, it's still one of a number of environmental quality problems which we must look at. We cannot look at it alone. It's important to those here. It's important as an environmental issue, but we have to keep in mind the problems of the total environment with which my agency is concerned.

I wish you would take back to the Governor and the people of Hawaii also our aloha. Thank you very much, sir.

Mr. BOGOST: Thank you, sir. And I will be swimming in the ocean in about eight hours.

Dr. MEYER: I would now like to ask Ellen Stern Harris of the Council for Planning and Conservation of Los Angeles if she would favor us with her remarks. Mrs. Harris, nice to have you here.

STATEMENT OF MRS. ELLEN STERN HARRIS, STATE OF CALIFORNIA

Mrs. HARRIS: Thank you, Dr. Meyer. Thank you, gentlemen, for this opportunity.

I am here as a member of the State of California Environmental Quality Study Council. I am going to read you my formal testimony and then perhaps comment on some other aspects.

The interesting thing about this testimony is that it has already been published and it is the result of hearings that were held in Los Angeles in March of 1970. This is current at the moment, because nothing has happened to change any of the problems delineated here.

So, if I may. In August of 1969, when the increase in air traffic over the west side of Los Angeles Basin began to build to a distressing volume, I contacted the FAA in hopes of learning how we might obtain some relief. I submit to you for the written record a copy of my entire conversation with the FAA's Regional Manager for Los Angeles.

This took place July 31 at 8:20 a.m., 1969.

"Mrs. Harris: What will it take for Beverly Hills residents to get relief?

"Mr. Hilton: Moving the airport.

"Mrs. Harris: Who could we call to get relief?

"Mr. Hilton: I know of no one you can call for relief.

"Mrs. Harris: I know of no hearing that was called to change the air corridor and put it over our community.

"Mr. Hilton: We have done nothing the law required a hearing for. The airport is there to be served. I am not going to turn off those planes. They serve a city that spent a lot of money on that airport.

"Mrs. Harris: What do you suggest that I do?

"Mr. Hilton: Very frankly I would suggest that you're living in the wrong place. The airport is there and it must be served. In Europe they shut down the airports at night by governmental decree. Times have changed and they will continue to change.

"Mrs. Harris: Here's another plane overhead. Would you say they've been coming at the rate of about one every three minutes?

"Mr. Hilton: About.

"Mrs. Harris: What can be done about this?

"Mr. Hilton: Beverly Hills was open space at one time, maybe it should have been kept that way. We could all live in the mud flats of Orange County, they have no value.

"Mrs. Harris: How do we re-route these planes?

"Mr. Hilton: There isn't going to be any re-routing. I have no way to help you. My job is operating the FAA for the convenience of the flying public and for the advancement of aviation.

"Mrs. Harris: Here's another plane now. Would you say that's about one every two minutes?

"Mr. Hilton: Yes, they leave the airport runway every morning at the rate of about one every two minutes.

"Mrs. Harris: Without sleep, I just can't function. What can be done?

"Mr. Hilton: I have a friend who keeps a small machine in her bedroom that makes a small buzz. It goes all night to drown out the sound of airplanes. Are you air-conditioned there?

"Mrs. Harris: No. My house is 45 years old.

"Mr. Hilton: That makes it bad."

Well, this is the kind of frustration that led me into my technical report to you. I had no intentions of becoming a technically-oriented person, but I had very little choice.

Dr. **MEYERS** Mrs. Harris, in addition to the fact that we have had that taken down by the court reporter, do you have a copy of that that I can have immediately, that transcript?

Mrs. **HARRIS**: Well, this is my only copy. Perhaps we can get it Xeroxed outside. I rather treasure it.

Dr. **MEYER**: I would like to have a copy of it. Mr. Bergesen, would you see if we can get a Xerox copy made somehow of this? I would like to have it rather urgently.

Mrs. **HARRIS**: Thank you.

Well, my feeling is that I am part of that flying public, but I do like to sleep at night at my home so as to be fresh enough the next morning to fight the traffic to L. A. International. The cargo flights all night long are now keeping the flying public inconveniently awake. The FAA suggests we move. We might very well do that, only to find they granted permission for still another air corridor over our new home.

We seem to be offered a freedom of choice closely resembling Russian roulette. I know of no totalitarian government that dictates when its people shall be permitted to go to sleep, and when they shall be awakened.

But now many of us in this democracy find that our freedom to get to sleep or to try to relax on Sunday afternoon on the patio has been denied to us without the benefit of a single public hearing to determine our feelings in these matters.

Beverly Hills and the other affected west-side communities were well established long before jet aircraft came into L.A.X. When a new freeway is to be built, public hearings must be held in the concerned communities before the route selection can be finalized.

But in the case of approach and climb-out corridors over our communities, no opportunity whatsoever for public participation in this critical decision is provided.

Those in Beverly Hills are not alone in their objections to the resulting noise. There are 14 city councils in the South Bay Area objecting for the same reasons as home-owner groups across the west side, including Pacific Palisades, Brentwood, Bel Aire, and even West Hollywood, which is quite some distance.

We have submitted recommendations for remedial action on the part of the FAA, the airport, and the CAB during testimony before the State Environmental Quality Study Council. This was held in Inglewood. But so far we have been unable to discover any mechanism which requires any of those agencies to adopt these—those recommendations and put them into effect, if they prove to be feasible.

These are some of the reasons for the present aircraft noise problems in our area:

1. Too many flights.
2. The planes fly at unnecessarily low altitudes.
3. Planes are inherently too noisy.
4. No corridors to control the lateral path of aircraft have been established based on noise contour studies.
5. Noise limits have not been established which restrict noise exposure to those required for healthful and environmentally desirable living.

I concur with Mr. Baron's comments about annoyances not being any longer the issue. I am in hopes that, as the Air Quality Act of 1970 takes into account the protection of the health-sensitive population, those of us who are among the noise-sensitive population hope to be similarly protected.

The aircraft noise problem that now threatens to blanket the entire Los Angeles Basin could be greatly alleviated if the Federal government would take the following actions:

Direct the CAB to completely review the route structures and to delete unnecessary flights between any two cities. Aviation statistics show that on the average domestic airline flights traveled half empty during the first six months of 1969, a situation which is bad, both for the people on the ground and the airline stockholders.

Yet the CAB keeps adding new route approvals into L.A.X., compounding the noise problem, the airlines' load factor problem, and the air traffic control problems as well. But then, no CAB hearings were ever conducted here to determine if the affected public wanted their noise problems compounded.

Relief could be gained if the Federal government would direct the FAA to set the earliest possible time limit by which the airlines must either retrofit their noisiest aircraft with quieter engines or subject their present fleet to an accelerated phaseout, replacing them with aircraft which will at least have been subjected to the new noise certification tests.

Then direct the FAA to plan a network of standard flight corridors over each metropolitan area, where there are no alternatives to flying over these areas, designed to minimize the noise exposure of persons on the ground.

Noise limits should be set as a criterion second only to genuine air safety considerations and not second to inappropriate criteria such as airline, if you will, economics or the need to have some additional navigational facilities.

You see the sum of this is the absurd situation we find ourselves in. We have an easy solution to the noise problem at LAX. We have even found that when they put this into practice, it gave us 100 percent relief. All it meant was that the planes needed to fly out further over the water, which is not heavily populated, and when they return over the shoreline they are at a high enough altitude because they have already done their noisy climbing activity over the ocean, so that nobody need be affected at all.

Well, what does this mean? This means a little more time for the airlines, and a little more fuel expenditure. It may not be ideal from some standpoints, but it makes all the difference in the world as to the quality of our lives.

Now recently the FAA has decided what shall be declared normal sleeping hours for the population. The FAA has actually decided what normal sleeping hours shall be. If you were up all night with the baby, and planned to get a rest during the afternoon, that's just too bad.

If your doctor says you have got to take a nap because you have got a—you know—rheumatic heart or whatever, that's tough. And you can sit there and get all kinds of muscular contractions and anxiety, physiological responses that you can be conscious of in your system. You can watch your friends who live near the airport.

We had a meeting, and we were sitting around the table, some of the girls who live out at LAX. These women are prematurely aged. I say that because they are not here today. But I want to tell you—I want to tell you, you literally can see the toll that this has taken. The intenseness in their face, their expression, their hands. I know this is not a scientific study.

I participated in what was known as a sleep deprivation study done by the Federal government out at UCLA, and it was—was a fascinating study. But I can't help but wonder what the importance in value would be of a quiet deprivation test. This would be a study as it affects marriages, as it affects parent-children relationships.

There is a woman who lives out at LAX and is a—herself is a pilot, and she told me the most fascinating story of what happens in the family relationship when LAX is fogged in for a few days. She described how their babies, when they are actually asleep, the muscles would contract with a jet overflight. But I don't think this study is scientific, and I don't think a scientific study has been done. But I think it is just crying for documentation in this situation.

Now let me say—I am giving you some indication of what you will find in these pages, and I would appreciate it if you will take the time to take a look at it. I think you have the essence of this point from just my dialogue with Mr. Hilton.

What happened is when I first became aware of the situation a few years ago, I called the City Attorney of Beverly Hills. And of course, he is living in this marvelous air-conditioned City Hall, and he doesn't hear anything or smell anything. It's beautiful. So he said, "Oh, gee, Mrs. Harris, you must be mistaken. I don't hear any planes."

"Tell you what. You come to my living room, and you sit here and you see if I am imagining things. I would be relieved if these things were all in my mind." I said, "My God, they are going over every six minutes."

And he said, "Right."

And I said, "What are you going to do about it?"

"I don't think there is anything we can do about it."

So the City Council passed a resolution, and they sent me to a hearing. They couldn't have been more darling about everything. Finally, you know—finally I decided that we have got to do something.

Well, it was most fortunate, but I had a little handy Congressional Directory, and I looked up in there, and there is a Committee on Science and Astronautics. It turned out that two of the members of that committee were running for office right now. Not now. At that point last year.

And I thought, "Boy, it wouldn't hurt them a bit if they had a hearing on this problem."

So I called the two of them. One was running for the Senate, and one was running for Congress. And they seemed quite amendable. And we did have such a hearing, and that is what this testimony is from.

But the interesting thing is LAX sent a two-page telegram refusing to come to testify and be questioned. And yet within only a few months after that, maybe only a few weeks, suddenly planes disappeared as if by magic. You could hear the birds sing again. You could hear yourself think. It was the most glorious thing that ever happened. They figured it out. Marvelous.

Then little by little by little, it's creeping up all over again. But it isn't like they had any hearing. But it's just this big mysterious government happening.

You may not know it, but there have been bomb threats out at the control tower of LAX, and I can understand the frustration of people.

Now, I must, in all fairness to the FAA, to whom I have been terribly grateful, say that I am sleeping nights, you know, which is a mistake because it gives me energy to come testify in the day. But I do feel if they can do it at night, gentlemen, surely they must be able to find a way so that we can enjoy a Sunday on the patio without feeling we are in the center of a war theater.

I have been bombarded all summer long, and it's just nuts.

Now I did notice just recently a letter from a woman which was printed in one of our little local newspapers. And I would like to read that.

"I wrote to the FAA suggesting that the present level of noise pollution from commercial jet airliners is needless in the case of eastbound jets climbing over residential Santa Monica, West Los Angeles, Westwood, and Beverly Hills. These jets could spend about eight minutes more over the ocean before turning over our homes, thus gaining twice the altitude and making half the noise.

"The FAA has chosen to ignore my letters—but wouldn't the commercial airliners be irate if we residents living under their beeline flight paths dumped our home garbage at their ticket counters?"

Well, you know, I think that describes the intensity of the feelings of people.

Now something recently happened which I don't understand because I am not a pilot. On September 15 the FAA announced new aircraft rules for LAX. They plan to use separate night altitudes in an effort to reduce hazards of collisions. There was not a word about the hazards to the public's well-being in terms of noise.

So I don't think that anything really has been tackled in that area.

Now, you say, well, why not escape occasionally. You know, get up in the mountains. Well, I did. I went to a conference of the Southern California Association of Government up at Idlewild. A beautiful place. And there were jets from the Air Force. There's just no escape. You go down to the beach at Playa del Rey and you find that the new lifeguard station that was constructed there was ordered by the Department of Industrial Safety of the State of California to be soundproofed. You have got the picture of someone yelling for help and nobody hearing them.

Actually, even if the lifeguard station at Playa del Rey is soundproofed, there is no protection for your teenagers lying down there on the beach. They are being bombarded with the LAX traffic all the time.

So the conflicts in use are so blatant as to be truly absurd.

Fortunately I checked with the lifeguards, and they say their rescues are made by visual observation, rather than audio. But it's still distressing.

Some of the other things that were mentioned, first of all, tourism is the number three industry in the State of California. I don't know if that's already been pointed out. It's the number three industry in the State of California. And I think this is critically important.

I did appreciate so much the remarks of the gentleman from Hawaii in that regard. I think we have an economic stake—and Mr. Martin raised the question of economics. Of course, I would hope that to some extent the marketplace would be an appropriate test for your question on the economy and who is willing to pay.

I will tell you, when I turn on my Waring blender, for another 10 bucks I would have something lovely. It makes so much noise you really can't imagine. It's unnecessary, you know.

Other conflicts. Some mothers in the neighborhood went house to house and got a petition signed to put a boulevard stop at our corner. How could you not sign for that? The safety of the little children is at stake.

May I tell you what it's doing to the noise environment of our community? The cars screech to a halt, and then zoom away, you know, and I thought, "God, I never thought about that when I was signing for these little kids." It's keeping me up.

These are some of the conflicts we have. The truck route and no mufflers. Where's the Federal Trade Commission? I mean wouldn't this be a simple thing for them to take care of? This is interstate commerce. Can't they really participate in this kind of a thing?

I am concerned because I heard that BART, which I hope to be one of the most wonderful things to happen to California when it opens, is having problems with the noise of their vehicles, too.

These are areas where I would hope the Department of Transportation would spend some funds in finding out just how mass transit can also be quiet, besides being a relief in terms of air pollution. We are all concerned with the interrelationships of all of the aspects of the environment. And I know that people with EPA are more concerned than any.

We keep talking about our energy needs and our energy requirements. At the same time we say, "Well, why did you keep needing so much air-conditioning in California, in Southern California especially, where you have such a moderate climate?"

Well, you need the air-conditioning because none of the architectural considerations are taken into account. You talked, I am sure, about soundproofing, and it is vital. But if you want light designed into the structure of your building from natural sources, you wouldn't need air-conditioning and you wouldn't need all the electricity for the lighting, and really, why are we doing the air-conditioning in so many cases? It's noise-conditioning. We call it air-conditioning, but it's really to block out the entire external sound.

My own noise surrounding has become really quite absurd. I am living in that beautiful residential area, and there is a kid who lives behind me with a beautiful new stereo. And I keep thinking shouldn't there be a governor on it.

We talk about speed governors on automobiles. Shouldn't there be a governor on it, so that you may not possibly turn it up any higher? Couldn't the kid have an ear-set with about a 25-foot cord, like I do on the telephone? Then only he would be subjected to this sound, instead of the whole area.

So I think about this sort of thing very much more of the time than I would like to be thinking about it.

The landscaping question that's been brought up, you know, the gentleman from Hawaii suggested that landscaping might help. I imagine you are all familiar with the Division of Highways of the State of California having done a study which disproved this. It's only an optical sound barrier, which is not very effective for your ears.

I was interested in his comment on coral being used in the paving, and I was wondering how that relates to the new concept of glasphalt. Maybe we should nip it in the bud.

I have more thoughts, but I would like to hear some of yours.

Dr. **Meyer**: Thank you, Mrs. Harris, for giving a very sensitive view of the problems and for providing not only some thoughts about the nature of the problems, but also some means of coping with them.

As a responsible—and I hope responsive—Federal officials, I am deeply concerned when another elements of the Executive Branch is subject to criticism. I am sure, however, there is always more than one side and perhaps more than two sides to any problem. Just as I am doing with some criticisms of the Defense Department which we received yesterday, I am going to take your transcript of this conversation and send it to the Administrator of the FAA, and ask him for the record if he will give us some comments thereon, so that FAA's side of this story will also appear in the record.

Sometimes bringing these things into view like this focuses the proper attention and gets necessary action. I hope this method will work in this case.

Panel? Dr. Plager?

Dr. **Plager**: Mrs. Harris, I might note in passing that loss of energy and, if I may note premature aging, do not seem to be a problem from which you have suffered in the course of these events.

With reference to your comments, I take it that it's your view that the landing operation at Los Angeles International is not a major source of noise for the—for the environs?

Mrs. **Harris**: I didn't finish the rest of my testimony which would have gone into both the take-off and the landing patterns as being simultaneous problems for us.

Dr. Plager: I see. Your comments about the take-off, the climb out over the ocean, suggested that that was perhaps a major solution. And I wondered how that helped with the take-off problem.

Mrs. **Harris**: You mean with the landing?

Dr. **Plager**: Yes. I mean with the landing problem.

Mrs. **Harris**: Well, the rest of this is in—the landing part is in this, which I know you will get a copy of. I also didn't go into the social costs of this whole new helicopter concept that we have for policing the area. I don't know if you are familiar with that, or if anyone testified on it.

But the noise, harassment, social costs of the helicopter patrol by the police and sheriffs have become real excruciating. It's something that people I don't think realize the intimidation of a helicopter coming into your area, supposedly in search of a prowler in the neighborhood. It isn't worth it. It isn't worth it simply because of what it's doing to the people.

The independent pleasure of a 7:00 a.m. flight by a private pilot on a Sunday morning, that he should impose his pleasure on the entire community, is so absurd as to defy reasonability.

You know, there are many things I didn't go into, because I didn't feel it was fair in the course of this time.

Dr. **Plager**: Let me ask you, then, one specific question focused on that general problem at Los Angeles. To what extent has the airport proprietor been approached on the question of whether he can affect the operational practices of the airlines in terms, for example, of this climb-out over the ocean aspect? To what extent has someone—has your group or some other group that you know of actually put the question to the airport proprietor as to what he can do?

Mrs. **Harris**: The proprietor disclaims any authority. He claims that that has been pre-empted by the FAA, which, in fact, I think it has.

I think his only control under both State and Federal regulations is shall he be allowed to utilize these facilities. But I don't believe that after he takes off or during his landing he has any control, the proprietor.

Dr. **Plager**: That may be an easier answer for the proprietor than he is really entitled to.

Mrs. **Harris**: As an attorney in this field, I would certainly appreciate your views.

Dr. **Plager**: I simply raise that question with you. I might note that the Illinois studies looking into the question of the extent to which they are—the airport proprietor has some more responsibility for his operations, and I simply commend to you that thought for—

Mrs. **Harris**: Have you gotten O'Hare, for instance, to be responsive to that concept?

Dr. **Plager**: No. O'Hare and Los Angeles both are taking the same view, but they may be in error.

Mr. **Hildebrand**: You mentioned that some air-conditioning is actually noise-conditioning?

Mrs. **Harris**: Yes.

Mr. **Hildebrand**: Have you become more acutely aware of the noise emitted by your home appliances? Has your bombardment by the airport noise made you more acutely aware of your home appliance noise?

Mrs. **Harris**: Well, no. I—I don't have that many home appliances. I think I have always been amongst the noise-sensitive population. You know, I am the kind of person that would say to my father, "I hear my brother," and he's two blocks away. And sure enough, it would be his Volkswagen coming into the garage about three minutes later. And my father would be unnerved by this kind of thing.

But I do have particularly acute ability to hear. So I don't consider myself the normal population, but I have enough input from other people who do consider themselves more closely approximating the average, and they are upset.

So when they are upset, I am only reflecting the average population. I am more—I have Elizabeth Cuadra of your staff to thank for that. One morning she said, "Ellen, aren't those planes bothering you?" And they have been bothering me ever since. Though they had been bothering me, the difference was that Elizabeth gave me some hope that there was an effective way to do something about it.

They had been bothering me, and I had talked to her about it, and that's why they called me. Have you had enough? Are you willing to get into the fray? This is what really she said, and I finally realized that it was not getting better, but it was getting worse.

So I called when I found out that the scheduling was getting more intense, and that's why it was bothering me. Frankly, the average member of the public doesn't even begin to hope to contend with this dilemma. They don't allow themselves to participate because it's so futile, seemingly.

But I have hoped that you people are going to do something to make it really an attractive environment again, which California was. It was magnificent.

Mr. **Baron**: You mentioned about night-time relief. Is that because of fewer flights, or the different pattern?

Mrs. **Harris**: This is what I don't know. And this is the information I am not getting from the FAA. They are singular in their inability to communicate. It is astounding to me, because they did not make this determination in any public meeting, and they did not issue any statement that indicated that is what was happening. It was my own ability to perceive that I was sleeping nights again.

Mr. **Baron**: Do you know of the Noise Abatement Center?

Mrs. **Harris**: That is a bunch of baloney. That is the biggest hokey organization. I wouldn't call that committee for anything. It's a farce. It's a fraud. Really, that does nothing. I mean it's supposed to be an outlet for an outraged public. The public's had it. They haven't done a damned thing to help.

Mr. **Baron**: They have a telephone line, I understand.

Mrs. **Harris**: Big deal. People phone me. They don't phone them any more.

Mr. **Baron**: I take it, then, you have talked to both the FAA and the airport operator?

Mrs. Harris: We had a meeting with one of the local councilmen, and the FAA, and, you know, it's all very polite and pleasant, and we are all quite cordial and charming. But it doesn't solve the problem.

It isn't that we haven't tried. Really, Mr. Baron, we have done everything we can in terms of political pressure.

I was at Congressman Reece's office only last month and, you know, he tells me he has a bill in. I says, "Swell. But what are you doing for me lately?"

Mr. Baron: The airport is owned by the City, isn't it?

Mrs. Harris: Yes, it is.

Mr. Baron: Which is a unique case?

Mrs. Harris: And it's an independent department of the City, so that the council has very little control over it. It's one of the more frustrating political arrangements that I could possibly delineate, and we anticipate the same trauma in Palmdale, which I know you have heard all about.

Then you also have heard about the San Pedro proposal. Has anybody told you about the offshore airport proposal for Los Angeles?

Dr. Meyer: Yes.

Mr. Baron: What is your reaction to an offshore airport as a substitute for LAX?

Mrs. Harris: Well, my reaction is in that newsletter I gave you each a copy of, because it's quite intense. My reaction is one of, you know, this isn't solving it at all. It is just exposing a whole new range of population to the problem.

What I am hoping you can find is a way to stop noise at the source. This, to me, is the greatest hope. This is where the greatest research effort should be applied, I feel, is in the generating of the noise at the source.

Mr. Baron: I couldn't concur with you more wholeheartedly.

Is there a corridor so if you had an offshore airport it would be possible to come into that airport and leave with a minimum amount of impact on populated areas? You are doing it anyway at Playa, and so—so—so that you are forcing actually such a—a strip—landing strip, if you will.

Mrs. Harris: I would like to have an opportunity to study all the alternatives before I would make a comment on it, because without the whole study, you can't just talk about the noise impact.

You have also got to talk about the marine environment and when you are talking about dredging, this kind of a thing, it is incredible what this proposal includes. I have the figures in there for you, and you will see you can't just give a simple yes or no. As always, the balancing out of factors in any environmental decision-making process must be considered. But I don't see it now as a hopeful proposal.

They are talking about nuclear power plants exploding on islands also out on the ocean. That ocean is going to be so cluttered up, you wouldn't believe it.

Mr. Baron: Is it your contention that in the balancing of factors that because of the difficulty of public participation, and so forth, that not all the factors are put into the hopper for balancing?

Mrs. **Harri**: Absolutely. That's my view.

Mr. **Baron**: Thank you.

Dr. **Dietrich**: You have mentioned speaking with the FAA at some length, and also apparently with the airport operator. Let me ask you whether you have spoken with the—or considered the question of the airlines, and have you observed any difference in behalf—between the flights of the different airlines that might be involved?

Mrs. **Harris**: I wish there was some way for me to have a telescope out there at all times checking off who is flying lowest. But I don't have any way of knowing that one airline is more responsive or concerned than another.

For instance, PSA just got an airport arrangement with the City of Long Beach. The people down there are in such anguish over it. But on the other hand, PSA claims that they are doing everything to retrofit this themselves.

Then there are smog emissions, so you hear proposal after proposal, and none of it really adds up to anything verifiable. I don't find any difference, but I would be happy if an airline would tell me what they were doing, so I could appreciate the difference.

Mr. **Martin**: Have you spoken to the airlines? The reason I ask is that you have spoken to the FAA, because, of course, they control the flight paths. But you would be surprised how responsive the airlines can be in modifying this, and in any relationship with the airlines I know that all the major airlines are very concerned about noise abatement and the public, and where they can institute something that is—will not create a safety hazard, they are very interested in doing this.

Mrs. **Harris**: Mr. Martin, it seems to me that the public relations people of the airlines read the newspapers, so they know very well what the fight is. They know what we have been going through. I am not paid by anybody. My expenses are not even reimbursed, usually.

So for me to go and spend a day having lunch with somebody at an airline, this assumes that I have nothing else to do. Now I am hoping that this agency will become my ombudsman, and they should please go and see the airlines so that I can get on with the business of living. Okay?

Dr. **Meyer**: Good point.

Mrs. Harris, in conclusion let me say a couple of things.

One, I thought that you presented a most important view which I certainly will communicate with people who are concerned with environmental impact statements in addition to myself, and that is that the law does require public hearings on proposed highway actions, both under the Highway Act and under our Section 102C of Public Law 19910.

And there have been some communications between our agency and the FAA regarding some applicability of these provisions toward air corridors. But I think the way you have presented it is an even more succinct reason for some sort of consideration on this.

Certainly the energy released by aircraft flying through established corridors is equal or perhaps greater than that on the freeway. So this thought is a real good one that, in spite of the —some of the technical difficulties which I am quite aware of, that suggestion is a very, very important one, and one which our office will follow up on.

Mrs. **Harris**: Dr. Meyer, if I may just for a moment reflect on the question of impact studies. I have very grave reservations about the validity of the many impact statements that will reach your desk. I feel it's time we began to pay our scientists and our engineers and other experts for giving their opinion instead of giving the opinions for which they are paid.

And I am very concerned that I can pay anybody to write a report that comes out any way I would like.

Dr. **Meyer**: But those provisions, Mrs. Harris, call for public hearings. That's the part I am talking about.

Mrs. **Harris**: This is helpful in the impact statement.

Dr. **Meyer**: Yes. The law requires for public hearings and the transcripts of those public hearings must accompany the impact statement. So if you are interested in the same sort of approach as to the highway action, then this is one mechanism by which that approach can be brought into play without a single new law.

Mrs. **Harris**: Good. Well, I am delighted.

Dr. **Meyer**: But all it says is that the actions of establishing air corridors should be treated in the same way as actions proposed for highways, and that an environmental impact statement ought to be required which, in turn, requires a public hearing, whether you like the way the—the impact statement or not may not be germane to the fact that it provides a mechanism for public hearing, which is what you are—

Mrs. **Harris**: Right. So you have an opportunity to critique the impact—

Dr. **Meyer**: Right.

Mrs. **Harris**:—statement as presented.

May I ask you this, Dr. Meyer. Can these hearings be held where the public can afford to participate? In other words, if you are holding a hearing on, say, Palmdale, and the impact statement for the Palmdale—since so few of us can afford to fly to Washington, D.C., can there be some requirement that says you must have it in the impacted area?

Dr. **Meyer**: The law requires that.

Mrs. **Harris**: Beautiful. I am very grateful to hear that.

Dr. **Meyer**: There are provisions to the Highway Act, the Federal Aviation Act, the one that you mentioned earlier, and the Environmental Policy Act, which require this. And this is something we will have to work out.

Now in fairness to the FAA, whom all of us do put some lumps on their head, I have to say that certainly at the Washington level there is a deep and abiding concern with some of the problems that you have raised. And that's why, as I said, I intend to direct your comments to the right people so they can follow up on them.

And I certainly take note of your suggestions that the effects of sound on household living need far more scientific study. This has been brought out before.

Hopefully one of the things under the research program which we anticipate to undertake in the Environmental Protection Agency—assuming we get certain legislation which both sides of the aisle are pressing for, both parties, and executive and legislative branch are all concerned with—is some very broad research in this area. We would hope to work with people like yourself.

I said I was hopefully a responsive public official. I would be less than responsible, also, if I did not make a comment at a hearing regarding police helicopters.

Testimony we received in Dallas, Texas, from the Mayor of Dallas, and the testimony we received at other places has shown that, while the helicopter used for these purposes is very noisy and needs control of the noise, it's not the noise associated with the helicopter that the police are interested in. It's their ability to apprehend criminals, and to reduce the crime rate in certain affected areas. As an example, crime in Dallas, Texas, has been reduced approximately 45 percent by the use of the helicopter since its institution.

Now I would submit that, based on the figures that the mayor presented to the panel there, that's rather startling, and one would have to say in talking about social costs that the reduction of burglaries, break-ins—

Mrs. **Harris**: I'd like to see that data.

Dr. **Meyer**:—attempted rapes and other crimes of violence have been reduced very sharply through the institution of a combined radio, ground, and air system in a high crime area. The noise causes it to be looked at, and the same technology says that we can probably get quieter helicopters.

Mrs. **Harris**: Oh!

Dr. **Meyer**: And one just has to say we have received testimony that's showing sharp reduction in antisocial acts which have resulted from the use of this.

And I would submit that before one stood in judgment, one ought to take a look at the entire picture.

Mrs. **Harris**: I concur 100 percent. I think that one would have to take into account the whole picture as it affects and enrages a part of the community, and perhaps you are getting other studies of antisocial side effects.

In other words, I am sure that the mayor, in good faith, presented this data. The data was compiled, no doubt, by the police department, who often wants to justify its helicopter properly.

We have helicopters landing proposed in all the city parks. This is not an appropriate use for a city park. And, you know, these are the things that disturb me. And I have gotten very skeptical about official interpretations of data. And I would like to see the rest of the police picture in Dallas or wherever.

Dr. **Meyer**: Well, we heard the same thing in Atlanta and a couple of other places. But if you would like, we would be happy to send you a copy of the testimony.

Mrs. **Harris**: As a matter of fact, is there any possibility that your department might be sending out a newsletter, so you could keep those of us who are concerned informed as to legislation that's pending that perhaps our communities should get behind and back for you? That would help. And how they would, you know, how this kind of legislation, if it were passed, would affect these kinds of problems, because if we can hear from you, perhaps we can help you do the things that you want to accomplish; whereas if we have no way of knowing when it's time to act, you can't ask us for support.

Dr. **Meyer**: Well, we are going to try to do a better public affairs job. But there happens to be an Act of the Congress which prohibits Federal departments and agencies from engaging in what is known as lobbying. We can always tell you and your Congressman, certainly, the things that are in the mill but I am afraid we are forbidden by law to stir up the public to support any particular piece of legislation.

Some people don't know that Federal departments and agencies and members of the executive branch, employees, are strictly forbidden by the Congress from lobbying. It's a proper law, I think. Citizens' advocates, of course, can take up and do anything they desire.

Thank you very much, ma'am. I appreciate your testimony.

I should now like to ask Mr. Richard Dyer of the State of California Business and Transportation Agency, Department of Aeronautics, if he would come forward.

Mr. Dyer, glad to have you here. We look forward to hearing about some of the things that the State is doing that has a considerable reputation for having undertaken many, many, progressive things in the nation with regard to noise and other environmental problems. And, obviously, we are most anxious to listen to you, sir.

STATEMENT OF RICHARD G. DYER, STATE OF CALIFORNIA

Mr. **Dyer**: Thank you very much.

Dr. Meyer, and members of the Board:

I think before I go into the prepared statement that I have here, I think just a comment or two in recognition of the oratory which you just received from Mrs. Harris is in order. This is, I think, a pretty good representation of the feeling that we have encountered as well as the Department of Airports in major cities have encountered up and down the State wherein the local citizenry have become pretty highly organized and have been effective in talking to their legislators who, in turn, have put us to work in the drafting of the noise standards which I am here to tell you about today.

I think it shows quite well that there certainly is a high enthusiasm in these—in these groups.

It is indeed a pleasure to be allowed the opportunity to officially address your organization concerning the subject of noise control and enforcement. We feel it is appropriate for the California Department of Aeronautics to speak to you concerning aircraft noise problems which are occurring in and around our airports here in California. Our remarks are confined, however, to airport noise problems.

The obvious two areas which need furtherment in the protection of people from high noise conditions are:

1. To quiet noise at its source, and
2. To separate and/or insulate people from the high noise areas.

The recently adopted Noise Standards for California airports uses all possible tools available within a State Government to accomplish these goals. However, it appears that the Environmental Protection Agency may be able to lend its assistance in the accomplishment of these goals to the betterment of all our citizens.

It is our feeling that the Environmental Protection Agency may, in the future, be in a position of assisting the Federal Aviation Administration in its decision of whether or not to require a Noise Retrofit Program for the engines of the older noisier jet aircraft. It has long been our feeling that this is a necessary step even though costly, and the assistance which EPA may be able to provide in this area would be welcomed to the residents of California. We recognize that a noise retrofit program represents a large cost factor to the airlines involved, and feel that an appropriate means of recuperating these costs must be made available to the airlines coincident with the costs of the retrofit program. It is commonly recognized that the noise retrofit program would not reduce noise from aircraft to the desirable state, but it would at least be making use of the state-of-the-art of noise reduction as it exists at this time.

A secondary effect that the noise retrofit program would have should be noted. A reduction of five decibels in aircraft noise, if accomplished by a considerable number of aircraft, would result in a 35 percent decrease in the land area enclosed by the key contour line used in the description of noise problems which will be required to be established by the Noise Standards for California Airports. This obviously represents a significant reduction in the land area involved. By combining a noise retrofit program with a two-segment glide slope approach which would incorporate a steeper glideslope than currently being used, there is reason to believe that the approach noise of jet aircraft can be greatly reduced, which in turn, reduces the land area affected to less than one-half of its present boundaries. We have found that land use around an airport must be controlled to a higher degree than currently being done in other to achieve land use compatibility around airports.

The appropriate use of land around an airport should definitely consider the noise conditions which will exist in the area being considered. The EPA should consider examining what it can do to bring about a greater emphasis on this need for local governments to properly zone the land use around airports.

Here in California, as was mentioned earlier, we have written a regulation governing airport noise and feel that it is reasonable, and puts as much pressure on the industry as compliance will allow at this time. The Noise Standards are based upon two separate legal grounds:

1. The power of airport proprietors to impose noise ceilings and other limitations on the use of their airport, and

2. The power of the State of California to act to an extent not prohibited by Federal law.

The Regulations are designed to cause the airport proprietor, aircraft operator, local governments, pilots, and the Department of Aeronautics to work cooperatively to diminish noise. The goal of the Regulation is to cure the ills and problems brought about by airport noise without the disruption of services from the airport, since they are used and needed by essentially all our citizens.

Encouraging results are beginning to make themselves known with the implementation of noise abatement procedures and noise abatement departure flight paths in some areas. It is our opinion that it is appropriate to attack the noise problem from every angle and every facet available commensurate with consideration for the costs involved.

The technology is being developed now to build a quiet engine for future jet transport service. The Environmental Protection Agency should take a strong position favoring the continued funding, design, construction, and implementation of this engine as rapidly as possible. Technology will be of no use to us if we do not implement it. The eventual requirement for a quiet engine for all our transport service is an absolute must if we are ever to achieve the good neighbor relationship for our airports that they once enjoyed.

The California Noise Standards are not designed to hinder the necessary air transportation of our State, but they will require the eventual reduction of noise around our airports to the point deemed compatible and consistent with the land uses around the airport.

The EPA should consider a mutual effort between FAA and EPA of setting a guideline type airport noise standard which could be forwarded to state governments for their adoption concerning the regulation of aircraft noise. This may, in fact, be a more workable solution since FAA is not the proprietor of very many airports, but rather state and local governments own and manage the great majority of them.

It would be highly desirable from an operational viewpoint to have a similar standard, including a tie-in with land use surrounding an airport for all fifty states. The California Noise Standards would obviously be a useful tool for you in making such consideration since it is the first such state regulation.

The noise standards for California airports include more than just a requirement for compatible land use around an airport, in fact, it includes every facet which will be useful in the reduction of noise as it reaches a resident in the near vicinity of an airport. The noise standards take into account such things as how many flights a day occur, how noisy each particular flight is, what time of the day the flight occurs and the duration the flight is near the listener.

The California Noise Standards also require a noise monitoring system be established for airports deemed to have a noise problem. The noise monitoring system will aid in the enforcement of the regulation and hopefully provide a means for the proper management of the airport for greatest noise reduction. The monitoring system and indeed the entire methodology required by the California Regulation is written to allow it to be used as a planning tool as well as an enforcement tool, and to do so at the most reasonable cost factor.

The regulation requires that the monitoring system be based upon "A" Scale sound measurements which are then integrated for the duration of an event and averaged into total yearly summation. This will provide the total noise picture for any given airport. A monitoring system designed to do this same task in the methodology currently being proposed by the FAA would cost many times more and would achieve very little if any, additional accuracy.

We feel that the California Noise Standards have indeed set out to rectify the noise problem areas in our State in as reasonable manner as possible. I am leaving with my testimony a copy of the California Noise Standards which I respectfully request that you examine in detail. Following your examination, it would be our desire that you find an appropriate means by which you can support our efforts in implementing this regulation.

I thank you very much for the chance to speak directly to your Agency.

That's the end of the presentation I have. And I would like to answer any questions you might have.

Dr. **MEYER**: Thank you very much. I will start off on my left and work down the table. Mr. Martin?

Mr. **MARTIN**: Thank you. Mr. Dyer, you have alluded to retrofit of aircraft, and I would like to explore this a little.

I have heard this now for the second day in a row, and I have heard it in previous hearings. You are talking about a program—let me give you my interpretation of it—that at best would go into effect starting in three to five years.

In other words, the airplanes would be modified and in operation three to five years from now. And you are talking about a negligible reduction after five years, and adding five more years to the life of the airplane and half of that, because they are going to have to amortize this.

Therefore, instead of retiring noisy airplanes, you are perpetuating them with a retrofit program. Wouldn't it be more feasible to put in massive amounts of money in an early retirement system?

Mr. **DYER**: I think that that may achieve the desired goal in a better manner. I think there are some aircraft that—that is probably the best economic trade-off, and should certainly be an acceptable means.

I think the only aircraft that should be retrofitted are those which definitely will be in service at least another 10 years beyond the time, in fact, that retrofit can be achieved.

Mr. **MARTIN**: Yes, but the actual retrofit program doesn't apply. Now I am very sensitive to noise, because I am under a flight pattern near Kennedy Airport, and I can tell you a drop of five decibels is going to do me no good, as far as I am concerned.

Mr. **DYER**: Okay.

Mr. **Martin**: You are not talking in the magnitude that the average person is going to feel. You are talking about billions of dollars, and yet we heard testimony from a lady a few moments ago that she in no way would be satisfied. In fact, she wouldn't even know you had done anything after spending $5 billion.

Mr. **Dyer**: We considered this position very seriously, and we feel that, even though it's only five decibels, it is a step in the right direction, and it will, by the accumulation of flight after flight after flight, have an effect of land reduction within what we require to be established as an area of noise problems.

And in terms of that land area reduction, it is a sizable area.

Dr. **Meyer**: Would the gentleman yield a minute?

Mr. **Martin**: Sure.

Dr. **Meyer**: You mentioned land area, and I made a note while you were talking, sir—"Thirty-five percent decrease in land areas affected." Could I ask how many acres or square miles you are talking about?

Mr. **Dyer**: Yes. I you had a hundred square miles, this obviously would be a reduction of 35 square miles. I can't give you a specific answer, Dr. Meyer. I say that somewhat in jest, unless I would also know how big your noise problem area were to begin with.

Dr. **Meyer**: I don't want to seem antagonistic, but it would be useful, I think, because we are trying to find out information as to various techniques and various impacts of noise from a national viewpoint.

It would be useful to know if either the State of California's Department of Aeronautics or Mr. Yost, the Deputy Attorney General, who is going to testify later, may have some information on what is the land area currently impacted in the State of California by aircraft noise in certain finite specified levels. Then one would, indeed, know what this 35 percent decrease is.

Mr. **Dyer**: That's correct. And I don't know of anyone who has totalized that area.

Dr. **Meyer**: I see.

Mr. **Dyer**: Now I think in about a year we will be in a position to answer that question quite directly, assuming that noise monitoring does begin and in the near future here in California.

Dr. **Meyer**: I see. Also, regarding the statement that the approach noise could be solved at many airports by reducing the noise impact land area about one half. You wouldn't really know, then, how much that one half is?

Mr. **Dyer**: That's correct. I can't give you a—a number in terms of acres or square miles.

Dr. **Meyer**: I see. Well, is there any way you can give a guess?

Mr. **Dyer**: I would be afraid to try to do that. I am afraid I would mislead you, Dr. Meyer.

Dr. **Meyer**: All right, sir. Fine. Am I to infer from what you are telling me that some studies are now under way in the State?

Mr. **Dyer**: Our regulation requires, as of its first enactment, the definition of noise problems throughout the State.

Dr. **Meyer**: I see.

Mr. **Dyer**: In the accomplishment of this, the regulation allows a paperwork estimate of the location of all contours for airports suspected of having noise problems. When that is done, we will have answers to the size of areas which you are referring to.

Now there are several airports which already know this. In fact, you heard good testimony yesterday from Mr. Supervisor Bogost.

Dr. **MEYER**: 200 square miles, I believe, he indicated.

Mr. **DYER**: I think that's about right. And many of the Southern California airports have also compiled this of their own interest, where these contour lines fall. We do not have them totalized as a total figure for the State.

Dr. **MEYER**: Fine. Thank you. Mr. Martin?

Mr. **MARTIN**: Let me go on to another point now. Why—did California feel that it's necessary to come up with another unit that's very similar to currently accepted units? CNEL. I can't see much differentiation between that and NEF, except the use of a different constant, which takes a 35 or a 25 acceptable level contour, and NEF makes it a 70 acceptable CNEL, which may just create more confusion in the public—in the public place.

Mr. **DYER**: Very good point. I am glad you brought that up. We did model it after the NEF methodology. No question about it. We think that we—the NEF methodology, for what it's intended, does a pretty good job. But we think in—in terms of writing a State regulation, that monitoring is going to be required and, therefore, enforcement is required.

Now you have just entered the area of the real world costs. The costs involved for a monitoring system to do the NEF methodology have been reported to us to be six to eight times as much as the system based upon the basic "A" Scale, and it is also reported to us that in the overall figures, because of the—there are not too many aircraft which have a high pure tone characteristic any longer, although there are some that the "A" Scale will, in fact, do a very acceptable job for a continuous monitoring system on a statewide basis.

This basic concept is even backed up by the International Civil Aviation Organization in their feeling on the same subject.

Mr. **MARTIN**: Well, the reason I bring this up, the ISO, the International Standards Organization, has a document on monitoring around airports, and it uses the A-scale, naturally.

Mr. **DYER**: Uh-huh.

Mr. **MARTIN**: There's an easy conversion from the scale to the perceived noise level scales. Why come up with a completely new number? The reason I am concerned, when I started out in the field of aircraft noise, there was a magic number called 112 EPNdB, and this became locked in, and then we started coming up with one different number after another, one different scale after another.

We now certify aircraft in this country to effective perceived noise levels. NEF became a way of planning, could be a way of monitoring. All of a sudden we have CNEL. It just seems to create additional confusion.

Mr. **DYER**: I agree with you. And when I first started bringing myself up to speed in the noise business, I encountered the same problem. But, unfortunately, money is a highly important factor when you get down to making people do things, and we found that this was a much more acceptable criticism for having caused the birth of a new noise monitoring scale than was the costs involved of not doing so.

Mr. **Martin**: Let me just ask one more question on this.

We heard the testimony at previous hearings and also yesterday that the California Regulations that are—that are currently being considered would virtually remove about half the traffic from Los Angeles Airport. How do you see that?

Mr. **Dyer**: If you read the entire regulation and understand what it means, and include within it the variant sections which are written in there which require economic and technological feasibility of compliance with it, the answer is no.

The regulation by and of itself will not cause that. But there is a secondary problem area which has occurred regarding any system which defines a noise problem area, and it's a legal problem. And the airports fear—and there is reason for them to fear, based upon past history—that once you define an exact line that says this is a noise problem area, you now have introduced into the public hand a tool with which they can say in court, "You are doing me damage."

The airports brought this to our attention, and we have since introduced legislation which is pointed directly at curing this problem and preventing it from occurring. And I feel that it will pass. It appears to be moving through the Senate at the present time. And I will read it to you if you would care to listen to the phraseology used.

But essentially it says that the lines and contours used in the computing of noise problem areas shall not be used in court as proof of evidence of damages.

Mr. **Martin**: Let me explore that. We have some legal people.

Dr. **Meyer**: I was going to say I think our two eminent environmental lawyers on the other end of the platform here may have some comments on that one there.

Do you want to make the legal comment, or do you want your lawyer friends?

Mr. **Martin**: This will be all very nice in California, but there are 49 other states which can easily adopt this kind of thing and then bring lawsuits in those states. There is no pre-emption from lawsuits. I leave this to the other fellows to then pick up.

Mr. **Baron**: I will defer to the attorneys.

Dr. **Meyer**: Would you? Okay. Fine.

Dr. **Plager**: I have a number of questions, Mr. Chairman. Should I focus on this one, and then—

Dr. **Meyer**: Focus on that one, and then yield back to Mr. Dietrich, if you and Mr. Hildebrand, the counsel, would do so, please.

Dr. **Plager**: Let's zero right in on this question, Mr. Dyer. I am familiar with the Aaron's case, which I think is the boogaboo that spooked the industry.

The Court held there that the NEF contours or the data with regard to those contours was some indication of—of the noise impact, some evidence that could be used.

I suppose the central question is why not if, in fact, it is true that the statistical or—or empirical determined noise levels established by whatever scientific techniques are available to show what the noise impact is on the community, if that data is available, and, in fact, it can be shown in a court of law with due process and under all the procedures that we have that people's property and health is being adversely affected by an operation, either privately or governmentally owned, what is the objection to letting those people have a legitimate recovery?

It seems to me that the—that the—the specter of lawsuits and —and harm to the industry in closing down the airports is simply a disguised way of saying, is it not, that the individuals who are directly affected by this public service ought to bear the total cost of the impact of that service, and that the airplane traveler, the airports, the industry and ultimately the consumer, the person who travels on the airplane, ought to get off scot-free.

Now I don't understand quite the rationale. I don't see why I, as a traveler, ought not to have to pay a little more for my airline ticket and share in the cost of the impact, the adverse impact, of the—of my activity on some individuals who happen to be stuck with the noise problem.

So I guess my first question to you is why in God's name would the State of California want to deny to its citizens the right to use the best available evidence in a court of law where the defendant is protected as well as the plaintiff to get a legitimate recovery for injury?

Mr. DYER: Okay. The noise standards are keyed to a—first, the number one guideline, not that it be based on health or injury, but that the noise standards we set be based on the amount of noise desirable by a person residing in the vicinity of an airport.

This key phrase led the noise standards into being more restrictive than—than where you first start incurring the amount of noise required to do physical damage. Therefore, the land of areas included under an area which is not desirable or acceptable are rather huge, which laid in the case of Los Angeles such a tremendous financial liability that it would not only have bankrupted the Department of Airports, but also the City of Los Angeles, which must stand good behind any liability that the Department of Airports cannot afford.

We do not feel that this standard, although it is intended to do everything to be able to rectify noise problems, should become such a tool as to entirely stop the air transportation system which that would do.

Dr. PLAGER: Well, let's make sure the record is clear and that you and I are clear on at least two points.

One of them is that no court I think would say that the—a particular number, be it a CNEL or an NEF number, is conclusive proof of injury.

Mr. DYER: That's right.

Dr. PLAGER: And, indeed, although the court in Aaron didn't say that, on the other hand, a court that is to say a court can certainly take into account the specialized nature of those particular statistical or empirical determinations and the purposes for which they are produced, which is not to determine liability in a court of law.

But it seems to me a court ought not to be denied the evidence and the testimony that the government has through elaborate procedures determined that there is, in fact, certain kinds of noise problems and leave it to the courts to work out the way in which that evidence ought to be evaluated in determining whether there is, as regarding a particular property owner, in fact, a taking of his property unjustifiable by the governmental operation.

Secondly, I am not at all sure, Mr. Dyer, that the parading of the horrible possibilities of the extensive liability closing down the airport, shutting down the entire industry, is either very accurate. That is, I don't know any basis for assuming that that's what will occur if people, in fact, are given a reasonable recovery for their injuries and, secondly, if in fact that is the only remedy for the people who are hurt by this process, perhaps that should be the remedy. I really don't think it is the only remedy.

Mr. **Dyer**: No.

Dr. **Plager**: But I think it would accelerate the solution to the problem, don't you?

Mr. **Dyer**: Certainly would be a big hammer.

Dr. **Plager**: When my time comes later, I hope, Mr. Chairman, I am going to ask Mr. Dyer a little bit more about what his state agency might be doing in some of these state areas.

Dr. **Meyer**: Have you yielded to Mr. Hildebrand now, sir?

Mr. **Hildebrand**: I have only one small comment which perhaps should be stated. The denial of the court of certain criteria or bases for proof may have a chilling effect on remedies being sought, and other remedies that plaintiffs may have a valid claim. That's my only comment.

Mr. **Dyer**: I have no comeback for you.

Dr. **Meyer**: Mr. Dietrich—Dr. Dietrich?

Dr. **Dietrich**: I think I am encouraged to follow along with this bit of questioning. My first comment and question is—is really that I, too, am rather shocked that you would feel that this kind of evidence that is related to the existence of certain contours should be, per se, inadmissible in the court.

I would think that you could take a somewhat milder view and suggest that, after all, since you talked about the possibility that this might be based on very restrictive criteria, that you might be willing to go along with the feeling that that should be something brought to the court that relates to its weight, rather than its admissibility. But I would like to ask a question, a broader question, going back to a broader question about this regulation in light of what the previous witness today said.

What does this regulation offer those people whose noise problem seems to fall in the transitional air space area? Now you talked in your testimony about near noise and presumably meaning near the airport?

Mr. **Dyer**: Yes. The noise regulations we have written do not cover the transitional noises, nor does it cover sonic boom noises, nor does it cover military aircraft noises.

Dr. **Dietrich**: Are transitional noises being considered for further regulations at this time?

Mr. **Dyer**: No, they are not at this time.

Dr. Dietrich: So the witness, the previous witness, a resident of the State of California, presumably would not, among possible others who suffer from transitional noises, are not being aided in any way by this regulation; is that true?

Mr. Dyer: No, that's not true. I think that the total effect will be to try to cause airports to improve their procedures such that this also will be a spin-off benefit from this regulation. But it's not a direct area of control. The two must go together if you are going to improve procedures to the near-in resident.

You are also going to improve the transitional areas by hold-'em-high type programs which the Federal Aviation Administration is trying to encourage.

Dr. Dietrich: I am afraid your answer has mystified more than clarified this for me. I thought at first that you were going to say that the state regulation was going to have some positive pay-off in areas that it didn't directly touch.

Mr. Dyer: That's what I meant to say.

Dr. Dietrich: And then you closed by saying this is something really the Federal government is doing.

Mr. Dyer: It's typified by that, I said. Now the state regulation also does—cannot control the—an aircraft itself. But it puts in the hands or makes the requirement of the airport proprietor to deal with all of the airplanes using his facilities to the betterment of all procedures. And, in fact, and in this effect it will have a betterment. In fact, it's already starting to occur in many of the airports.

Procedures are the first and cheapest thing to which an airport manager can look to—to try to improve his total noise picture, and he will improve the transition area noises by the same thing.

Dr. Meyer: Before we go on, I have a message here.

(Announcement off the record, not reported.)

Mr. Baron: I am a little bit—as a member of the public, I am a little bit confused as to exactly what—in the first place, I don't have clear identification of your agency. It's the California—

Mr. Dyer: Department of Aeronautics.

Mr. Baron: And you have a special exemption from some of the FAA pre-emptions?

Mr. Dyer: No, none whatsoever. We are a state agency, and we typically—or went around all the areas of control by the FAA in this—in the writing of this regulation.

Mr. Baron: In other words, you feel that this does not in any way conflict with what the FAA has staked out for its own?

Dr. Meyer: Mr. Baron, I believe Mr. Yost is going to discuss this with us later today.

Mr. Baron: Then the motivation for this is a desire to reduce the number of noise complaints; is that it?

Mr. Dyer: That's correct. That's one of the very obvious needs. We are trying to improve and reduce noise problem areas, and hopefully this will reduce complaints.

Mr. Baron: I would like perhaps—a restatement of the point made by a panelist to the right that the use of a different noise measurement method impedes court action. Is this—

Mr. Dyer: It will—a different noise measurement method will impede court action?

Mr. **Baron**: You talk about the use of what is it? CNEL, as against NEF, or I mean—

Mr. **Dyer**: Well, I can't tell you if that will impede it or hinder it or accelerate it in any respect. I can tell you that it's going to be a measured quantity, not an estimated quantity, which should lend it a greater reliability.

Mr. **Hildebrand**: Right. What I meant is that the use of the evidence or the use of the information gathered by your agency as evidence, if that is inadmissible, then other evidence of a similar nature may be—well, the inadmissibility of the evidence from your agency may have a—a chilling effect.

In other words, may cloud over the effect of other similar evidence.

Mr. **Baron**: Ignoring the litigation, how do you feel about the NEF as a tool or whatever in helping you in achieving a goal of a more compatible airport?

Mr. **Dyer**: No problem. In fact, we accept NEF contour lines as a direct substitute for the 65 and 70 CNEL contours. They are very close to the same. The only problem occurs when it comes time to start monitoring and measuring and enforcing.

NEF is a good system as far as what it was intended to do. It does a fine job of it. We must go a little further than that in an enforcement tool.

Mr. **Baron**: It was brought out yesterday that the NEF is based on acceptability and not on comfortability. There was a little discussion on that point. Do you have any—

Mr. **Dyer**: I think that that's a subjective thing, and I can't—I can't—can't get into that area. That's probably true for that witness.

Dr. **Meyer**: I would like to ask a question. How do you propose to use the CNEL as an enforcement tool? How will you identify airline X, the flight number, hypothetically 102, departing on Runway 38—

Mr. **Dyer**:Uh-huh.

Dr. **Meyer**:—violated your noise law?

Mr. **Dyer**: All right. One particular airplane in the CNEL monitoring system does not by itself violate the system. It violates a single event criteria. There are two scales or schemes of requirements within the standards. One is a single-event monitoring system. The other is the CNEL, the Community Noise monitoring system.

It would only be appropriate to monitor and measure for single-event violations from one specific location where you can say that no airplane can make any more noise than this at that point.

It's not exactly the same as the certification of locations and requirements, but it has to be standardized so that you know what to expect at that given location.

Dr. **Meyer**: Well, I am going to ask Mr. Yost, so he will be prepared for a question along those lines, as to how many cases the State of California expects to prosecute under that sort of a—a system, because I think it's important from the testimony we have received in other hearings which have indicated the biggest source of complaints is the fact that people identify airplanes flying over their property making noise and, as we have heard several times, they really don't care about NEFs or CNELs. What they really care about is they are being affected, and that they would like to see something done to stop this.

I realize the FAA has the responsibility. The State has responsibilities. It's a very tenuous legal question, but I was curious to get some information regarding you know, how do you envision—you have got a unique law. What do you expect to do with it?

Mr. DYER: Well, the basic system includes everything that we can do to improve just exactly those situations. The aircraft can be flown in respect to what the community around it happens to be for its least amount of noise emitted to the neighbors of the airport.

Dr. MEYER: I see.

Mr. DYER: And that's the first attack that this regulation will try to put together people to do something about.

Mr. MARTIN: Mr. Chairman, let me ask a question on the same point. Article IX of the rule specifically exempts the aircraft operator, the airline, from a violation if he establishes that what he did was for safety purposes. That's just a quick capsulation, which means that if the airline and the FAA, in setting the flight procedures, establish a flight procedure for safety prime consideration and noise secondarily, they immediately are exempt, no matter what noise level they make from this rule. How do you put teeth in this?

Mr. DYER: Well, the rule did not make the allowance that there would be a get-together by any other agencies in trying to beat the rule.

Mr. MARTIN: It's not beating it. Just setting a safety requirement for flight.

Mr. DYER: Right. All right. That particular phraseology is intended for an aircraft which has to make an unexpected go-around from his approach course and may violate the single-event requirement that the approach monitor, for example, because he's now had to push forward to essentially take-off power and make a go-around because another aircraft is either stopped on the runway or the runways had a truck across it, or for some reason he cannot land.

It is placed in there primarily so that—for the unavoidable things that they will not penalized for the things which obviously they must do in the—in the interest of safety and in the interest of his passengers.

Dr. MEYER: Mr. Hildebrand?

Mr. HILDEBRAND: Yes. Do—do these regulations establish—I haven't read the regulations. Do they establish noise criteria for flight routes? In other words, say five miles from the airport? Do these establish noise criteria for that noise location?

Mr. DYER: Not specifically. It does require the reduction of the total noise picture as will be typified by the contour locations if they happen to go as far out as five miles, and there's an incompatible land use primary residential areas in there.

The regulation requires that the airport reduce that noise contour, draw it back in, or eventually try to achieve compatibility in that land area.

Mr. Hildebrand: And who will—who will do the monitoring? Who will enforce the regulation?

Mr. Dyer: The enforcement was required to be done by the counties. The monitoring will be done by the airports involved, but enforcement is a local agency—done by whatever agency within the county they choose to use. Probably the county sheriff or county engineer's office would be involved with enforcement.

I think it's specifically in the bill. It says the county or the sheriff, I believe.

Mr. Hildebrand: Will there be monitoring stations, then, throughout the—throughout the surrounding area?

Mr. Dyer: There will be monitoring stations in—for airports deemed to have a noise problem. Where an airport exists away from populated areas, there will be no requirement for monitoring stations.

There is a system devised in the standards for giving guidelines to which airports have noise problems and which do not.

Mr. Hildebrand: One final question. There is a penalty provision?

Mr. Dyer: There is a penalty of—automatically a thousand dollar fine for the single-event violations.

Dr. Meyer: Dr. Plager?

Dr. Plager: Mr. Dyer, I have got one or two things I would like to talk to you, raise with you, and perhaps you can clarify them for me.

First of all, this—just by way of putting aside an issue, this pre-emption thing, I think that's another spook that's been chasing us around the woods, and that is used by everybody to argue for their own particular view.

Let's put—let's put that spook to rest for the purpose of our conversation, and let's assume that the State of California does have the right and the duty to do something to protect its citizens from excessive noise.

I am familiar with your regulations. What is the status of these as far as their effectiveness? Don't they go into effect at the end of the year? Is that the understanding, or are they subject to some further legislative action and, if so, what's your prediction there?

Mr. Dyer: There is further legislation moving through the Senate at the present time to delay the effective date to December 1, not the end of the year, but December 1 of '72. And this is the effective date, and it—by that they intended the endorsement to begin on that date.

Now they also moved closer in time the date at which aircraft monitoring shall begin for airports that have noise problems to December 1 of '71, which is an instant reaction. That is a very difficult one for airports to live with in light of the fact that they have not been informed yet as to which airports have noise problems.

But they are now going to be required to do that instantaneously and to instantly have on line a monitoring system or request a variance from our department.

In many cases I fear that there are going to be needs for variances because the equipment is not sitting on the shelf waiting at this time, nor is the money budgeted by the airports to do this. It's going to be a hard one to live with for many airports.

Dr. **Plager**: If that legislation does not pass, what will be the status of your regulations?

Mr. **Dyer**: If that does not pass, December 1, '71, the effective date, and following that there is a six-months period for the counties to examine and define which airports have noise problems.

After the airports are notified, they have, in turn, a second six-months period to budget, purchase, and get their monitoring systems on line to begin the monitoring.

Dr. **Plager**: You stated in your opening comments, Mr. Dyer, that you felt the California Department of Aeronautics was using all possible tools that state government had available to it. Let me explore that with you just a little bit.

Again, assuming we can lay to rest the pre-emption problem, and I don't minimize the problem. I just say that perhaps it's sometimes seen as too big. Let's ask this question.

We heard earlier some testimony from a young lady, Mrs. Harris, to the effect that—that the climb-out routes from Los Angeles International could significantly affect the noise impact on the surrounding community, the climb-out corridor concept.

What is your reaction to the idea on—and you also commented that most of the airports in California—and I think nationwide—are owned by local or state governments, so that, in fact, the really responsible proprietor for almost all of our problems are our own government, usually at the local and state level.

What would be the effect in your judgment if the state were to say to itself, if it owned the airport, or to a local government, if it owned the airport, "We want you to tell your airlines that they must fly a corridor that minimizes the noise impact or not land"?

That is to say, we don't want to put our hand on the throttle or the stick, as the airlines people are fond of saying, but that you are welcome to land at our airport but only if you land in a manner that minimizes noise impact on the surrounding neighborhood.

Now, of course, if you can show it's unsafe, then you ought not to land here.

Mr. **Dyer**: Uh-huh.

Dr. **Plager**: What is your reaction to a state program that would aim in that direction?

Mr. **Dyer**: The operation itself of the aircraft, of course, cannot be handled directly.

Dr. **Plager**: No one wants to put their hand on the stick?

Mr. **Dyer**: Okay. As long as they don't control the—actually control the aircraft, that's pretty close to what we feel must be done, and what we have aimed this regulation at achieving.

Some airport managers already have done what they can to say this is what we want as our recommended flight path on your departure. They have issued that to the airlines who are complying, and they have issued it to the private-owned noisy aircraft, primarily the business type jet aircraft, who are starting to comply, but they are not doing it in as well a standardized procedure as the airlines are in this case.

Dr. Plager: This would in no way hamper the FAA from saying to the airline—from saying to the airlines that you can't do that because it's unsafe? The airlines say yes, we agree. We won't land there any more.

In other words, your view is that the state isn't interfering with the FAA's authority over safety, is it?

Mr. Dyer: Not at that point, I don't believe they are.

Dr. Plager: Why can't your state agency do something more directly, for example, with the Los Angeles problem that we have been hearing all this testimony about?

Mr. Dyer: Well, this is the first step towards achieving the proprietors to do just exactly what you are talking about. The Los Angeles airport does have the right to, we think anyway, to require it—the best noise abatement procedures for any given type aircraft, and I have full expectation that they will do that. They don't like people calling them and complaining about noise. They would like to stop all noise if they could. It only makes sense that they are going to do exactly that.

Dr. Plager: Does the airport proprietor at Los Angeles accept both the responsibility for that role and recognize that he has some power to do it?

Mr. Dyer: I haven't put that question precisely to any of their management, but I would assume that they recognize that they have that authority.

Dr. Plager: Might the state agency be concerned to insure that the airport proprietor understands this part of the problem? You see, one of the difficulties, Mr. Dyer, that our studies have indicated is that everybody says they are powerless.

I know of no agency, state, local or Federal, who says they can do anything about the problem, with the possible exception of Dr. Meyer.

Mr. Dyer: Well, I think that when it comes time for us to examine those airports that do have noise problems, I think that one of the things that in the issuance of variance is to review with the airport proprietor what he is doing along the lines of writing a best noise abatement procedure for his airport, and this is one of the things we have in mind reviewing with him at that time, not as a control, but seeing that they are, in fact, doing what they can.

Dr. Plager: Is there anything in your regulations that requires the airport proprietor to sit down with your agency to review those procedures?

Mr. Dyer: Not spelled out. It is required in the variance that—maybe I should read it.

Dr. Plager: I am familiar with the variance procedure, but that would only come up if they applied for a variance.

Mr. Dyer: That's true.

Dr. Plager: Let me ask you this, to move on quickly to another question, and that is you invite the Environmental Protection Agency to do something to encourage local governments to take a more responsive concern for land uses in the airport environs?

Mr. Dyer: Yes, sir.

Dr. Plager: My question to you is why shouldn't the State of California do something about it, and if it should, what does your agency have in mind doing? What happened to the old idea of local government and state government solving their own problems, rather than turning to the Federal government?

Mr. DYER: We are doing what we can, and we have in the last year achieved an Airport Land Use Commission which was born to assist doing just exactly that. It is required that they be formed in counties which have airline type airports.

They then, in turn, advise the local county planning commissions on how to best present the furtherment of noise problem areas as one of their functions.

Now it does not have as much strength as required. We frankly have problems getting this kind of control because local agencies have always had the control over their own lands. But you find in some areas that you have as many as five or six different local governments concerned with one noise problem area, for example, and—

Dr. PLAGER: Isn't that exactly where the state has some obligation to move in and provide some sort of overall supervisory and, if necessary, regulatory program over land use?

Mr. DYER: Well, that's not—it may not be popular to say that, but it is effective and it would be a desirable thing from the prevention of further noise problems and for the aid with rolling back the existing problem that we have.

Dr. PLAGER: The problem isn't simply one of the airports and the airlines causing it. The problem is also one that our land use practices have been incompatible with the other hand?

Mr. DYER: That's correct.

Dr. PLAGER: Mr. Chairman, I will end there except for one comment, so that I am not misunderstood.

I don't want to appear antagonistic to you at all, Mr. Dyer. I appreciate his testimony, and I would like to go on record as supporting very strongly a suggestion that he made, and that is that he—that your agency look into the possibility of developing a sort of model or standard guideline type of regulatory program for state and perhaps local governments to work in this field so that the benefits of the research that's going on in some states, and perhaps in your agency, can be made available to all the states in the form of a model regulatory program.

Dr. MEYER: Thank you, Dr. Plager. That latter suggestion is one, of course, which is very prominent in President Nixon's proposed noise control bill, and also in the noise control bill proposed by members of both parties in the Congress.

One of the things in anticipation of some future passage of such legislation is as members of the Panel we have taken an extensive review of all the existing and the currently proposed schemes for regulation of noise known in the United States, as well as several overseas.

One of the reasons, to support Dr. Plager's view and some of the comments of the Panel here, that we are not antagonistic, we are trying to find out the whys of things because the Panel and our staff are reviewing literally thousands of laws with a view towards providing some recommendations as to what are the best or what are the or should be model approaches for different situations and also what should be avoided.

So I hope no witness, particularly those from a state agency or those from an industrial group, takes umbrage at being asked some rather pointed questions. Otherwise, we are back in the problem of truth by affirmation, and somebody says something is so, and then it's repeated a hundred times and it becomes accepted as truth.

I will yield to Mr. Baron, who has got a question, also. But before we move on, because we do have to keep on some sort of a schedule. I have several questions I would like to ask, if I might, sir.

In consideration of your noise monitoring system, have you explored the possibility of aircraft operators spoofing the system? It's been reported, for instance, that in Long Island, noise abatement procedures are spoofed by pilots because they know where the monitor stations are.

So he complies as he goes over the monitoring station, and then proceeds to go about his way doing things the way he wants to.

In designing your monitoring system, have you got a fail-safe, spoof-proof system?

Mr. **Dyer**: It is designed such that the locations are closer in to the airport, or may be closer in to the airport, which would put the aircraft at an undesirable point to be pulling power back. This can be done, but the limits, of course, are subject to the airports—how can I best say that? The airport proprietor will be choosing the limits commensurate with the type operation that he has, and will also have a range of locations within which he can set the monitoring.

Dr. **Meyer**: I see. Very well. The next question. In the views of some of us who have worked in the field of environment for a great number of years, variances are considered as licenses to pollute. In effect, in a certain way they really are.

Mr. **Dyer**: That's true.

Dr. **Meyer**: If you pass a law, you immediately say, you know, you cannot comply with the law because you now have authority to vary from the law.

My memory doesn't serve me correctly, although I have read your legislation. What are the procedures about variances? Are the public hearings called for when you issue a variance?

Mr. **Dyer**: Yes, they are.

Dr. **Meyer**: How long are they good for?

Mr. **Dyer**: Variances are good for one year, and must be requested and renewed each year on a year-to-year basis.

Dr. **Meyer**: They can be renewed? They are not one-time variances?

Mr. **Dyer**: They are not.

Dr. **Meyer**: So they are, indeed, renewable so that the law could be varied ad infinitum?

Mr. **Dyer**: That's true. But I think in light of—of what is possible to comply with, a regulation which is quite stringent by today's airports, there has to be a certain reasonableness applied to its use.

Dr. **Meyer**: I see.

Mr. **Dyer**: And that's why the variance route is written into the standard.

Dr. Meyer: Could I ask another question along those lines? Again we are trying to develop model laws, you understand, and the proposal was made by you yourself, and perhaps EPA ought to take a look at the California law as a model, and it's obvious that there are some real questions about part of it.

In structuring your monitoring system, I heard you in your testimony make a statement, well, a lot of variances are going to have to be given because the equipment isn't on the shelf and the cost hasn't even been considered in the funding.

If we were going to structure a model law to be followed by 50 states and 220 metropolitan areas, if you had it to do over again, would you take into account some sort of time limits as to funding and budgeting? Should the model law not follow the California law, but rather follow one that says the real word is that we have to do thus and so—

Mr. Dyer: We, in fact, did write in timing for exactly those purposes.

Dr. Meyer: I see.

Mr. Dyer: But you—our State Legislature, in all its infinite wisdom, has changed those dates.

Dr. Meyer: I see.

Mr. Dyer: And they have the power to override us any time they desire.

Dr. Meyer: I want to get that into the record, you know, as to whether this is considered by you all to be the way it ought to be, because generally speaking one ought to take into account technology and budget situations, also, and things of that sort, particularly if you are going to turn around and have to write a variance immediately.

I guess you can gather the Chairman's views on variances.

Mr. Dyer: We didn't like the need for more variances. It increases our work load additionally, but we have no say in the matter.

Dr. Meyer: Before we pass to the next witness, Mr. Baron has a question he would like to ask.

Mr. Baron: Two questions, if they can be defined briefly. One is is the noise problem defined in the legislation?

Mr. Dyer: Yes.

Mr. Baron: It is?

Mr. Dyer: The guidelines for the establishment of a noise problem are defined.

Mr. Baron: All right. What is happening to the EPNdB? The certification, as I understand it, is the terms of EPNdB?

Mr. Dyer: Certification for new airports?

Mr. Baron: Certification for new airports.

Mr. Dyer: It's a more elaborate—

Mr. Baron: Wait a minute. What I want to know is how is this being—how does this relate to what you are trying to do? The use of the EPNdB, you mean it's not applicable to you?

Mr. Dyer: The—the effective perceived noise system which you are referring to is far more intricate than what is necessary for an on-going, continuous monitoring system, and we have not gone that far. It requires so much more cost and intricate equipment that it's designed for the real fine tuning and highly precise measurements of aircraft.

We felt that that was not a worthwhile expenditure for the continual monitoring system.

Mr. BARON: Is there a way of relating your system to the EPNdB?

Mr. DYER: The single-event criteria could be approximated, depending upon the particular aircraft characteristics. If it happens that the aircraft that you are talking about has a pure tone quality, it would have a different effect than if it had no such pure tone quality.

As to what the relationship is, there is an overall average of a relationship between the single-event criteria and our standards and the EPNdB or the CNEL system, or straight A-scale system. All three can, for average conditions, be approximated.

Dr. MEYER: Mr. Baron, one of the things that we are doing under our current charter is undertaking a broad study of over 30 some odd different methods of reporting noise as an environmental value. Some of them are tailored to specific things, such—as the witness has rightfully pointed out—as the highly sophisticated EPNdB technique applying to airplanes.

We intend to co-operate with the National Research Council in really exploring this whole problem, and hopefully coming up with at least some means of translating this information into common denominators, because the situation is getting confused for even the experts.

I would like to thank you very much, sir, for being candid in your responses and again I would say we are certainly not antagonistic. We are just trying to get information; your questions and your answers to our questions were very, very helpful, sir.

Mr. DYER: Thank you. I have one request. I would like to ask that you again take into question the legal problem that we uncovered today concerning whether or not our noise standards can be used as proof of damage with Mr. Yost.

Dr. MEYER: Well, I intend to do that. We are also interested, of course.

Thank you very much, sir.

We are also, of course, concerned with some of the problems of highway transportation, and Mr. Robert Watkins of the California Division of Highways was scheduled to appear and, for some reason unknown to me, has had to cancel. I shall check with him and see if he can come, because some of the Panel had some specific points that they wanted to raise with him.

So let the record show that he was, indeed, invited, and we will check to see the reason for his not being here.

At this point I would like to call Mr. Richard Dyer. Or, rather, sorry, Mr. Dyer—Mr. Lowe, also a representative of the State of California. Mr. Lowe?

I know it's been a long morning, but you have a busy schedule, sir, and for that reason I am not adjourning for lunch, thereby conforming with your urgent desires to be on the record at this time.

STATEMENT OF A. E. LOWE, STATE OF CALIFORNIA

Mr. **Lowe**: Mr. Chairman, members of the Panel:

When I listened to Dr. Meyer's opening comments yesterday and the massive charge that Congress had laid on this Panel to come up with a report, I had the definite feeling that I have been here before.

Last year our Legislature considered a number of bills respecting noise. I think they passed one. But they did pass a resolution which requested the State Department of Public Health to appoint a panel or appoint a committee and to look into the problem of noise in California, and submit a report.

So that when I say I feel that I have been here before, I served as secretary of that particular committee. I will submit copies of the report to the Panel for review, because I don't think the problems of noise in California are unique.

The things that we found, and the recommendations we made, I think might be of some assistance to you in your considerations.

Dr. **Meyer**: Very good, sir, and the report will be included in the formal transcript, which will be submitted to the Congress. So the record will show that it will be inserted at the proper place in the transcript.*

Mr. **Lowe**: In starting this particular committee, I was impressed with the divergence of views with respect to noise. And I can illuminate that by two very short quotations from rather responsible sources.

In the report, "Noise: Sound Without Value", prepared by the Committee on Environmental Quality, the opening preamble is a statement by President Johnson which reads:

"The crescendo of noise, whether it comes from truck or jackhammer, siren or airplane, is more than an irritating nuisance. It intrudes on privacy, shatters serenity, and can inflict pain. We dare not be complacent about this ever-mounting volume of noise. In the years ahead it can bring even more discomfort and worse to the lives of people."

The report is dated September, 1968.

I have another comment on noise. In rebuttal—or just a comment on an article that appeared in "Public Health Reports" in July, 1968, and I quote:

"It is time for public health workers to recognize noise as a problem, become knowledgeable about its consequences, support legislation that would help alleviate the problem and promote programs aimed at noise control and prevention."

And then the discussion goes on to say:

"Medically speaking, it is possible to suggest that this conclusion has limited foundations and that, socially speaking, it may be quite untrue. Life without noise is unfit living for the average man. He must carry his transistor radio along on a camping trip. The silence of the forest or the open sea depress him. But on adequate noise he fattens and is refreshed. He drives an automobile with the car radio playing to dull the wits, but when the traveler returns to the freeway with the roaring diesels, the blaring horns, the appetite returns and the traveler gleans life and health at the roadside stand, happy with his milkshake, his hamburger or his sandwich. His metabolism is at ease with the roar of the traffic.

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*This Report is located on file in the Office of Noise Abatement, Washington, D.C.

"And, further, the noise of the cities are the featherbeds of comfort, and the noise pollution is nothing but pollution with excessive people. Although the quality of the noise needs improvement, some think, but the quantity is only reasonable."

Dated September, 1968, an editorial in the "Journal of the American Medical Association."

I thought you might want to have some idea of the scope of divergence with respect to the noise problem.

I am not going to read this report, but I think for purposes of possible questions, I should go through some of the major aspects of it.

Dr. **Meyer**: Yes, sir. Thank you.

Mr. **Lowe**: The report substantially consists of nine findings, and these are not unique. You will find similar findings in similar reports.

1. The sources and the levels of noise are increasing. I don't think I need to dwell on the text.
2. Noise can and should be controlled.
3. Environmental noise limits should be devised.
4. Standards for noise emissions should be developed.
5. New sources of excessive noise should be proscribed. I would like to comment on that.

It's quite obvious that, although we have had some discussion of people noises being a problem, really what we are talking about are things that make noise.

Dr. **Meyer**: True.

Mr. **Lowe**: And if we are going to make any substantial inroads on the noise problem, the sources of noise are going to have to be reduced, certainly in intensity of the noise and, although hopefully in the numbers of noise sources, the proliferation of things that make noise seems to be going on with our increasing technology.

6. Existing sources of excessive noise should be controlled. I think this is also self-evident, that such controls as can be imposed should be imposed.
7. Sources of excessive noise which cannot be controlled should be separated from people.
8. Industrial noise exposure standards should be lowered.
9. Building noises should be controlled.

The text illuminates each of these findings.

Addressing ourselves to the foregoing, and also to other matters that occurred to us in making recommendations to the Legislature, we found very much what Mr. Miller of Los Altos Hills discussed yesterday, that the average individual of the city or the county or even state agencies they get into this circle of no one has any authority or responsibility.

So our first recommendation was that the state establish an office of noise abatement, and we listed its functions to include:

A. Collecting and disseminating authoritative information on adverse effects of noise and of means for its control.

B. Developing, in cooperation with local government, model ordinances for urban, suburban, and rural environments.

C. Providing assistance to local governments engaged in developing and implementing noise abatement procedures.

D. Developing criteria and guidelines for use in setting standards for human exposure to noise.

E. Developing noise emission standards for new noise-producing objects admitted to California.

F. Developing noise emission standards for noise-producing objects now in use in California.

G. Developing noise transmission standards for new buildings constructed in California, and recommending building code provisions requiring compliance with these standards.

The second recommendation concerned noise standards for California airports and noise which emanates from airports is a major offense to large segments of the population who live in the vicinity of airports.

The State Department of Aeronautics has adopted noise standards for California airports which, if not changed by the Legislature, will become effective in 1971. And we recommended that these standards be adopted without change.

You heard Mr. Dyer's testimony as to possible changes.

The third recommendation concerns compatible land use in the vicinity of airports. And I want to read this text, and I think there may be some questions on it.

"Rationale: 'Noise Standards for California Airports', as adopted by the State Department of Aeronautics, require airport operators to establish noise impact boundaries and to achieve compatible land uses within these boundaries. Designated compatible land uses exclude schools and family residences and can be accomplished only through zoning regulations. Airport operators are not possessed of zoning authority, have limited influence concerning zoning within their own political jurisdictions, and probably none with other jurisdictions which may lie within their noise impact boundaries.

"The implications are serious for major airports which now have thousands of noise-impacted residences. It is unthinkable that all these people will be moved by zoning authorities, and it is equally unthinkable that the airports will cease to operate. 'Noise Standards for California Airports' provide solutions, but these solutions will be slow in coming for residents that live near several existing airports.

"This situation should not be allowed to develop around existing airports which are not impacted or around airports yet to be established. This could be accomplished by appropriate amendment of sections of the Public Utilities Code relating to 'Airport Land Use Commission.' "

The situation here is that the airport authority is required by the regulation to achieve compatible land use. He does not have the legal ability to do this. We do have an airport land use commission, and our suggestion is that they be required to accomplish this.

And the recommendation reads:

"Amend the Public Utilities Code to require airport land use commissions to achieve, by zoning, compatible land uses in the vicinity of all the airports and in the vicinity of existing airports which are not surrounded by land devoted to incompatible uses or enact other legislation to achieve this end."

The fourth recommendation relates to industrial noise exposure criteria.

"Rationale: Existing regulations limiting industrial noise exposures do not protect all workers against noise-induced hearing loss; moreover, the criteria on which the regulations are based provide only incidental and limited protection for hearing frequencies above 2,000 cycles per second, which is essential to enjoyment of some attributes of life, and do not provide adequate protection against other harmful effects of noise.

"Correcting these deficiencies will require substantial reductions in noise for a number of industrial operations and time should be allowed to accomplish these reductions; however, the criterion should be set as a guide for those industries that can meet it sooner and should become mandatory within a reasonable period of time."

Now the fifth recommendation reads, "Set the basic criterion for occupational noise exposure at 75 dB(A), and make this level mandatory for all industry by January 1, 1980."

Well, this is a very controversial recommendation. We have federally the Walsh-Healey standards, which are now a part of the Safety and Health Act which say that 90 dB(A) or eight hours is the basic criterion. If the exposure is greater than that, then you should, if you cannot reduce the noise, you should protect your employees against hearing loss. There I must say that this is a Public Health Department recommendation based on information presented to the Committee, plus a great deal of research work we did looking into this.

It is a very complex thing, and it's based not only on how we measure hearing loss at the present time, but it raises—we raise serious questions as to the adequacy of present evaluations. And there are some questions even as to what normal hearing might be and the way it has been established.

I would be glad to go into these questions if someone has questions about them when we start on questions.

Dr. MEYER: I am going to have several questions with you on this one, sir, at a later point.

Mr. LOWE: Right. Recommendation 5 concerns new vehicle noise limits, and we already have in the Vehicle Code, Section 27160, regarding these. And this recommendation concerns reductions in time of the noise produced by new vehicles introduced in California.

Do you wish me to read those, Mr. Chairman?

Dr. MEYER: No. The Panel has your report, sir. So again, I am sure a couple of the Panel members are going to have some questions about some of those.

Mr. LOWE: Recommendation 6, Operational Vehicle Noise Limits. These are assessed by the Highway Patrol on moving vehicles. The test is somewhat different than—than for the new vehicle. And we recognize that it's more difficult to introduce noise abatement in an existing vehicle as compared to a new one.

However, we do feel that such reduction is possible, should be brought about, and—and we have recommended lowering these through 1975.

Recommendation 7 concerns standard test for maximum motor vehicle noise.

"Motor vehicle noise emission test procedures are prescribed by the Department of California Highway Patrol. The test procedures for new vehicles differ from those for vehicles in operation. Neither test necessarily measures maximum motor vehicle noise.

"In order to implement Recommendation 5, a test procedure relating to maximum noise should be developed for new vehicles. Further, to insure that noise does not increase with vehicle use, the same test should be applied to all vehicles on a scheduled basis with time."

The Highway Patrol develops the method of testing. And this is a recommendation that they consider a single test for both new and used vehicles.

Recommendation 8 concerns urban transit bus noise limits. Transit buses are assessed the same as trucks or other vehicles of equal weight. However, the assessment of a truck that runs along a highway perhaps should be different than a bus that operates at curbside where large populations are waiting.

So we have recommended that the Highway Patrol develop some test equivalent to 50 feet which could be measured at a closer distance.

Recommendation 9, Motor Vehicle Exhaust Mufflers and Muffler Systems. We have three sections in the Vehicle Code now concerning these. Apparently they aren't as effective as they should be, and we find that in spite of these regulations, inadequate muffling systems are being installed and arrests are being made because of inadequate exhaust noise control.

To obviate this situation, standards for muffling vehicles should be established and regulations based on these standards should be adopted and implemented.

And Recommendation 10 concerns Automobile or Motor Vehicle Tires. And we recommend an amendment to the Vehicle Code to make provision for establishing standards for vehicle tire noise emissions as soon as reliable information relating to tire noise emissions becomes available, and for adopting and implementing regulations limiting tire noise emissions to the extent consistent with safety and traction considerations.

I understand that the Department of Standards is presently working on a method of evaluating tire noises, and that this was supposed to be available in April of this year. I haven't received a copy of it, but this recommendation was to more or less memorialize the Highway Patrol to take into consideration any information of this type that might be developed.

Recommendation 11, Compatible Land Use Along Freeways. I anticipate questions on this one, so I will read it.

"Noise problems that have arisen from the penetration of residential communities by freeways or by encroachment of residential areas on freeways are evident throughout California. Achievable noise reduction in individual motor vehicles will not solve these problems because freeway noise is generated by many vehicles in unison, which multiplies the noise.

"Freeways are inherently noisy and will be for the foreseeable future. Whenever possible they should be separated from people by distance sufficient to attenuate the noise to acceptable levels, or by barriers or freeway designs that provide equivalent protection.

"For freeways bordered by rural land, distance separation might best be achieved by reserving the land for uses compatible with the freeway noise environment. This excludes schools and residential areas.

"Acceptable noise criteria suggest the distance, in most cases, should be at least 500 feet. Residential area now subjected to unacceptable freeway noise, or which may be subjected to such noise by future freeway penetration, should be protected from excessive noise by equivalent barriers or equivalent freeway design techniques."

And the recommendation to that effect is included.

Recommendation 12, Government Leadership and Purchasing Power.

In general we find that the state government and city and county governments should use their purchasing power as a tool to acquire and use equipment which will tend to reduce noise.

Recommendation 13, Advisory Committee on Noise.

The time schedule for making a report to the Legislature of the scope that they ask, we found that we just could not respond in full to this, and we felt that the Advisory Committee should be maintained and continued in action so that we could respond to some of the requests that we did not answer in reply to the Legislature's request.

There is some supporting material and some charts appended to it.

I would like to make further comment on the report. There were nine findings, 13 recommendations, and the only thing I find unique about it is that on our Advisory Committee we have acoustical experts that invariably stipulated that we have the tools and the know-how and the technology right now to solve most noise problems.

Therefore, we took the attitude that why do more research. Let's apply what we know. So there are no recommendations in the report concerning research.

Well, what has happened with respect to this report? I can tell you that from the start there were 17—13 bills on noise, and four on environmental protection. Implicit noises included in these, a total of 17.

There were 22 bills on noise generated by the Assembly, for a total of 39. Of these, 29 are alive and are being heard either in committee or on the floor of the Senate or the Assembly. Two of the bills have been dropped. Four have been held in committee, which essentially for this session that means they are dead, but they can be revived next year.

Two have been passed and await the Governor's signature, and two have been passed and signed by the Governor.

So, of the two that passed is one which prohibits the sale of snowmobiles manufactured after January, 1973, which produce more than—this may have been modified. My copy reads 82 dB(A) at 50 feet, and passenger vehicles operated off the highway. This will include motorbikes and other things that children and people ride in the woods, and they must be equipped with an adequate muffler.

The other bill that has been passed and signed requires the Department of Aeronautics to give public notice of hearings in connection with airport permits or approval of airport sites to any interested person making a written request.

One illuminating and somewhat gratifying bill is one proposed by Senator Dills, which requires an adequate muffler on motorcycles operating off the highway. This was passed by the Senate, and last week it passed the Assembly, 67 to 0, which I think illuminates the fact that our Legislature is cognizant of noise and would like to do something about it.

Dr. Meyer: Mr. Lowe, I know this Panel will have a number of questions. I want to thank you very much for a very fine review with us of a law that has attracted national attention.

It's rather late. We have had a long session here this morning because of the gathering of valuable information. Would you consent to our asking questions of you after a luncheon recess?

Mr. Lowe: Certainly.

Dr. Meyer: And I realize people have lots to say, and my panelists have lots of questions to ask. So I ask the indulgence of the witnesses.

It's been a long day, but that's what we are paid for, to hear what people have to say. It's quarter to 1:00. I propose taking only 45 minutes, if you can return at that time, and I would like to continue with our questioning, sir, and with the appearance of the other witnesses.

(Noon recess.)

AFTERNOON SESSION

Dr. Meyer: All right. Very well. Now we are at the point where everybody has their blood sugar back up, and, after a little quite, their nerves back in shape, we will proceed with the afternoon session.

I will start off. I know that the Panel has several questions, but I would like to use my prerogative, although I usually ask the questions last. I figure they will ask them anyway. I would like to ask you several questions, sir. And then ask my colleagues to direct their comments to you.

First, with regard to the recommendation on occupational levels, I am a little concerned about the possible impact of such a recommendation. And I could like to ask a question with regard to the possible incongruity of designing a level of noise as being necessary to protect workers against noise-induced hearing loss, which in fact is lower than the level that exists on most city streets in the urban metropolitan areas of your state and in which there are some people who may not be occupationally exposed, but who are there for six or eight hours a day, and it would be assumed that, as an example, policemen who might be on traffic duty, not riding a motorcycle which would exceed those limits, and might be so stationed, or other persons would be expected to wear a hearing protection in these environmental situations incident to their occupation, that there is no reasonable or rational method of control. Was that envisioned when this limit was set?

Mr. LOWE: I presume so. A policeman is an employed individual. This is an industrial noise criterion. There is some difficulty with that. I might explain it that the present criterion is 90 dB(A) for eight hours, with certain increases in noise permitted if it's for less than eight hours. I doubt very much that anybody on a street is exposed to 75 dB(A) for eight hours at a time.

However, this might be experienced. In that case, the criterion would say that you should protect him with hearing protection.

Dr. MEYER: You see what I am working at is whether there is any difference in the industrial worker's ear and the average person's ear.

Mr. LOWE: No.

Dr. MEYER: And if you are saying nobody should be exposed to cover the 75 dB(A) for longer than eight hours a day, unless they have hearing protection, that's what you are really saying?

Mr. LOWE: That's what I am saying.

Dr. MEYER: So everybody in the State of California who is in a noise environment of eight hours a day or over 75 dB(A) ought to be wearing ear plugs, then, or some other type of protection—or some other protection?

Mr. LOWE: You see, the industrial noise criterion, Dr. Meyer, anticipates that a man exposed to loud noise will be away from that noise for approximately 16 hours in any eight-hour working day, and he would also be away from it for 48 hours over a weekend.

The hearing loss criterion is based on this relief from the noise.

Dr. MEYER: The reason I am following this line of reasoning is because there is considerable implication to recommendations relating to community noise exposure. I believe you have already agreed with me that the ear doesn't really know whether it's attached to the head of a man who is working or a person who just happens to be sauntering by. So you are saying that for those people who are exposed to over 75 decibels measured on the A-scale for eight hours a day and who may be exposed to noise from airports and other insults in the environment, aren't getting that kind of relief for eight hours a day?

Mr. LOWE: That's correct.

Dr. MEYER: And therefore most of these people should be wearing hearing protection because 75 dB(A) for those kinds of exposures is going to produce, according to this statement, noise-induced hearing loss? Not extra-auditory effects, but hearing loss?

Mr. LOWE: That's right. Perhaps I had better go into some explanation behind this.

This report was prepared with the assistance of a committee. Because of time limitations, the committee did not have time to review it.

Dr. MEYER: I see.

Mr. LOWE: From that standpoint, the committee cannot be considered responsible for this report. This is the report of the

State Department of Public Health.

Dr. MEYER: I see, sir.

Mr. LOWE: Now with respect to the 75 dB(A) as compared to the Federal standard of 90, I think if you will look in the dissertation or discussion or justification for the 90, you will find that this level concedes that some 10 to 15, or maybe 20, percent of the people who might be exposed to 90 dB(A) eight hours a day for a working life are going to get measurable hearing loss.

Now another rationale for this is that the hearing loss is assessed at 500 cycles, 1,000 cycles, and 2,000 cycles per second. Normal range of hearing in a young person goes up to 16,000, maybe 18,000, cycles per second.

The criteria is based on the ability to understand normal speech under normal conditions. And it ignores the fact that you might be able to hear better if—I mean you might be able to hear at higher frequencies so that to protect things other than hearing loss, at 500, 1,000, and 2,000, we feel that it should be more protective.

However, there was evidence presented in our committee, but even at this level of evaluation, 75 dB(A) might be too high.

Dr. MEYER: Well, what I am driving at is that there are certainly some people who would begin—and I am sure they would—taking with them a sound level meter, ride on the Bay Area Rapid Transit system, measure their exposure when they are walking in city streets in which until 1978 vehicles of 6,000 pounds or more will still be allowed to be radiating at 50 feet noise levels of 80 dB(A), and so if you have a tenuous stream of track in that 50-foot pattern, and that they will also measure the music that they hear, and so on, and discover that universally there is somewhere a little bit above that, then they should be being protected by your standard?

Mr. LOWE: Well, what an individual does upon his own is quite a thing, other than being exposed industrially or to a downtown traffic situation.

Dr. MEYER: I guess what I am really working around to is that it's obvious that the technological basis for that sort of limit needs further exploration.

I am not criticizing it. I am just trying to ask for these facets and implications of this problem and have them looked at by the committee, or were they just looking solely at the industrial environment and not realizing the implications to the—to the totality of the population?

Mr. LOWE: They were looking at the industrial noise criterion.

Dr. MEYER: That's what I really was driving at.

Mr. LOWE: If it extends to the general populace, why it can be extrapolated to them. The same noise exposure would be considered possibly damaging to the ear.

Dr. MEYER: I have two other brief questions. One, again I noticed that you have come up with some truck noise standards recommended, and I presume these have not been enacted, from what you said earlier, but—

Mr. LOWE: The bills are still alive.

Dr. MEYER: Yes, sir. Now the question I have is this. And, again, as I said, these are not antagonistic questions. I am just trying to get some information to help us in our logic. I am thinking of setting the stage for what other states might want to do, or other cities.

By 1988 you say trucks of 6,000 pounds or more should be of such a design. Is this under the test conditions prescribed which I presume are at the 50-foot distances, although your recommendation didn't say that they should not exceed 70 dB(A)? I presumed, you mean, the entire system of the truck, the engine, the appurtenances and the ties?

Mr. LOWE: That's right.

Dr. MEYER: Then later on you—your committee made a recommendation—a question that motor vehicle tires at speeds in excess of 60 miles an hour, dominant tire noise can be reduced by design, but the degree of reductions compatible with traction and safety requirements had not been established, and on these data it should be possible to develop legislation that tires sold will not generate more noise than is consistent with safety and traction conditions.

I have witnessed a couple of demonstrations following standard measurement techniques of trucks being coasted without the engine on, in which the tire noise was 70 dB(A).

Now the question I have to you is, sir, if the committee recognized that the motor vehicle tires were very important sources of noise, and a truck can be coasted by at a speed under this 60 miles limit, and have in excess of this consideration, that—is there an inconsistency here, I mean?

Mr. LOWE: I see what you are driving at.

Dr. MEYER: What I am saying is, in one place you are recognizing that the tire is the problem, and in another one you are saying more—you are saying research is needed, and we need legislation, and yet in the other one you are recommending legislation that presupposes what those people are going to come up with.

Mr. LOWE: I think if you look on page 11, Recommendation 5, there is a note at the bottom which clearly states the 1988 levels are not now feasible for current tires of vehicles, but should be adopted to encourage achievement of the 70 dB(A) goal.

We have on our committee representatives from automobile manufacturers. Their stipulation was that you tell us what you would like to have, and we will try to meet it.

And when you were talking about 70 dB(A), we were informed you are not talking about the present population of trucks. You are talking about completely new designs, new engines, new muffling systems, new tires, new gear train, the whole thing.

But to encourage the achievement of this 70 dB(A), you postulate what you want, and we will try to meet it.

Dr. MEYER: I see.

Mr. LOWE: Also a stipulation that it will cost you more money because achievement of this level of noise will probably be expensive.

Dr. MEYER: I see. And then based also on this discussion that the gentleman from Hawaii presented is a question of motor highway surfaces be looked into also.

Is there impact on this, or do you have a similar problem here in the State of using—

Mr. LOWE: I am not familiar with highway surfaces. I think in the audience there is a noise expert from the Department of Highways that might be able to contribute something with respect to automobile surfaces.

Dr. MEYER: Well, I regret very much, sir, to inform you that, although your Highway people were invited to testify—and this is certainly not a mandatory thing—they have found more pressing business in Sacramento, and we are unable to get that kind of information.

I am going to read their letter into the record in a little while. It would have been helpful to us, because we are trying to learn as much from California's extensive experience as we can, and, unfortunately, I am not going to be able to get that.

I would appreciate it if, for the record, you could attempt to elicit that information from them and get it for us, please, sir.

Mr. LOWE: I would be happy to.

Dr. MEYER: The Chair yields to Mr. Martin.

Mr. LOWE: Would the Chair yield to me? I find from the audience at noon that I am not properly identified. Many of the people didn't know who I am. I am A. E. Lowe. I am an engineer, State Department of Public Health.

Dr. MEYER: I am terribly sorry, Mr. Lowe. I thought that we had identified you. But I am glad you corrected us. Mr. Baron?

Mr. BARON: On the question of industrial hearing criteria, because I happened to have stated publicly that I wrote in this book that I wrote, I did question this whole stream of industrial noise levels.

What do you define as a criterion? I mean, do you know—in other words, the 100, the 500, 1,000, 2,000, 45 percent, whatever it is defined as, beginning of the impairment? Is there—was there a new definition established for the purpose of arriving at 75?

Mr. LOWE: No. However, our physicians have seriously questioned the method of assessing hearing loss.

Mr. BARON: The method?

Mr. LOWE: Right.

Mr. BARON: By that you mean the total system for the audiometry?

Mr. LOWE: Well, perhaps a little blackboard discussion might be illuminating on this, if you care to have that.

Dr. MEYER: If you can keep it within some reasonable limits of time.

Mr. LOWE: We don't need the blackboard.

Dr. MEYER: Well, you can use it, so go ahead. I said just as long as we don't get into an hour's schoolroom discussion on it. But—

Mr. LOWE: We don't have chalk, so that eliminates the blackboard.

Dr. MEYER: Well, that takes care of that. I bet you we could get some in a hurry, though.

Mr. LOWE: No, the—the way hearing loss is assessed is that, if you take a person, it's based on his ability to hear speech. This is the fundamental criterion that, if a person can hear normal speech and normal conversational tones, then he has no hearing impairment.

The fact that he can't hear higher frequencies than the speech frequencies is not considered. So that to take a person and put him in an audiometric booth and play a phonograph record with a canned speech on it and say, "Now, repeat back what was said", that was suspected as too onerous.

However, the audiologists and the experts that worked out this experiment figured if he can hear 500, 1,000, and 2,000, then he can hear normal speech.

As a matter of fact, if he can hear 500, 1,000, and 2,000 with no more than an average loss of 25 decibels down from normal audiometric zero, he was still hearing normal speech under normal conversational tones.

Well, this is a substantial loss from normal, and is still called normal ability to hear. We feel that if you are going to set a standard to protect hearing, you should protect all the hearing.

Mr. **BARON**: What do you define as "all"? In literature they speak of speech, for example, up to 6,000 hz.

Mr. **LOWE**: Right.

Mr. **BARON**: I mean that's what I am trying to ask, has there been some development in this area of a new criterion? I believe we need one. I happen to be very concerned about this business of 85 to 90.

Mr. **LOWE**: Not that I know of, except that there is a very elaborate—it's been described as so exquisitely difficult that only the—the proponent could work the system. And that's a member of your own Panel, Dr. Kryter, who has developed a new system of assessing hearing loss. It's in his book that he published in 1970.

Mr. **BARON**: Is this more permissive, or—

Mr. **LOWE**: It's much more restrictive.

Mr. **BARON**: Because 75 dB(A) in the numbers game is usually associated with the vegetative reaction, as Dr. Meyer indicated with the extra-auditory, and it's true that we know that there is hearing loss at 80, and that, again, a susceptible person is not protected in this usual formula.

But are you saying that the 75 was a—an intuitive stab at protection?

Mr. **LOWE**: No. There was discussion in the committee relating to the 90, and it was recognized that probably it should be 85 or less.

We had one stipulation that it should be in the neighborhood of 65, so that the 75 is based on somewhere in between.

Mr. **BARON**: But you don't recall what kind of protection? In other words, what kind of frequencies or what spectrum you are going for?

Mr. **LOWE**: No, I don't think the—the amount of data that would support this type of thing has been accumulated. I think the—I think the data on all hearing loss is rather sparse and questionable.

Mr. **BARON**: I happen to agree with you.

Mr. **LOWE**: The very fact that where we established normal hearing, if you examine the studies that were conducted, these

—these studies were conducted on people at World's Fairs and State Fairs.

Well, if anybody that's been to a State Fair or a World's Fair, you haul a guy into an audiometric booth and he's been exposed to children, animals, firecrackers, and maybe even an automobile race. It's recognized that people exposed to noise have a temporary threshold shift.

So taking somebody even if their normal occupation is in a quiet place, they may have a threshold shift when they are measured. I don't know how much effort was made to buck this out.

Mr. **BARON**: Do you know of anyone doing research or contemplating research in this area?

Mr. **LOWE**: No, but I am sure there's a great deal going on. But just where, and by whom, I don't know.

Mr. **BARON**: Another question. Why—as a member of the public, I am always interested in why motorcycles are always permitted to be higher than—in this case, on Page 12, than passenger cars, and so on.

If what you were thinking about is the protection of the individual, wherever he may be, it's always been amusing to me and puzzling that the—and I can understand the reasoning behind it —but we are more permissive to certain types of noise sources. Is it necessary in terms of your understanding of technology that we be so permissive as far as motorcycles, for example, are concerned?

Mr. **LOWE**: Well, Mr. Baron, I heard your discussion yesterday. The fact is we have millions of motorcycles today that do make more noise than the conventional automobile, which is relatively quiet.

If you look on page 11, you will see that, for 1978, we have asked that new motorcycles be the same as automobiles, and also for 1988. This is the state of the art at this point. And I think we are giving them lead time to develop quieter motorbikes.

There is one motorbike on the market today that advertises and makes a big deal about how quiet it is.

Mr. **BARON**: I know.

Mr. **LOWE**: And it sounds like an automobile. It's a very quiet machine.

Mr. **BARON**: The best measurement you say is at 15 feet. Is that accepted as a standard, because in his—one of the things that—one of the problems we have in open noise measurement is that the 50-foot specification creates problems.

And in—somewhere—I don't know exactly where you are referring to, but you refer to best measurement. You are talking about a reading of 15 feet?

Mr. **LOWE**: This was proposed in the committee, and we did not arrive at this standard test for this. I think that this asked the Highway Patrol to see if they can't develop one.

Mr. **BARON**: At or about that distance?

Mr. **LOWE**: To be realistic, to find something that will quiet a bus, or measure it so that it isn't more offensive than, say, a truck on the highway, because the bus is in close proximity to people.

One thing is that the conventional bus has a big disadvantage relative to a truck in that its exhaust is at street level. Trucks all exhaust up in the air, or at least most of them do. The motor compartment on most urban transit buses is much better shielded than a truck. You don't hear the same motor noise from a bus that you do from a truck. They do have a pretty heavy compartment. And some of them are acoustically treated.

Mr. **BARON**: I get the feeling from your committee that you had acousticians on the committee, and that a less than a 50-foot measurement would be acceptable?

Mr. **LOWE**: It was proposed by an acoustician that there is some means of measurement at—at 15 feet which should be developed. He did not have any guidance as to how this might be.

Mr. **BARON**: One other point. In your compatible, what was Article 11 or Recommendation 11? You talk about compatible. Was it zoning, or—

Mr. **LOWE**: Land use along freeways.

Mr. **BARON**: You say schools and residences. And I was just suggesting that you include convalescent hospitals.

Mr. **LOWE**: Hospitals.

Mr. **BARON**: Because we have heard some—

Mr. **LOWE**: Rest homes.

Mr. **BARON**: Rest homes. And we have had some dismal stories of hospitals built very close to freeways, and so forth and so on, because of so-called convenience features. But at great distress to patients and so on.

Thank you.

Mr. **HILDEBRAND**: The first question I have for you is not—you may not be able to answer, and I apologize, but it looks like that we will not have a representative from the Highway Department, so I would like to ask you.

I note under the operational vehicle noise limits, the Department of Highways properly is the agency which establishes the test procedure relating to maximum—to testing the noise levels. We witnessed a witness yesterday who told us that the regulations that they had established for testing these noise levels were inoperative because they were too complex.

Mr. **LOWE**: Well, there I wouldn't say they are inoperative. They are difficult, because they require an area free of obstruction, reflecting walls, and things like that, and the absence of other traffic. But they do—they have made thousands of tests under these conditions.

There have been strong recommendations that some means of testing the vehicle in the real world on the street, for example, in traffic, should be devised. This is an area that needs considerable amounts of investigation. It's something that for enforcement purposes is needed. You can hear the vehicles on the street out here. But the method of assessment of that particular vehicle is not available at the present time, as far as I know.

Mr. **HILDEBRAND**: Does the State have any review of these regulations, testing procedures?

Mr. **LOWE**: You mean the Legislature?

Mr. **HILDEBRAND**: Yes.

Mr. Lowe: No. The Legislature directed the Highway Patrol to devise test procedures, as far as I recall. Part of the legislation is that the Highway Patrol shall develop the method of testing.

Mr. Hildebrand: And then we were told also that the—the police have insufficient manpower and insufficient funds to—to give the full force of the law.

Has any provision been made to do any of that?

Dr. Meyer: Mr. Hildebrand, I believe Inspector Craig of the State Highway Patrol is knowledgeable on this, and he will be testifying next. Maybe you would like to ask him that question. He's probably more competent.

Mr. Hildebrand: Thank you.

Then on Recommendation 12, concerning the first part—concerning state funds. What has been done to—to put this recommendation into effect, the appropriating state fund for projects which require—which take into account noise?

Mr. Lowe: There are bills still active in the Legislature to do this. This is a recommendation for legislation. To my knowledge, they have not been passed, so that I do know that the—the Department of Highways has policy statements in their contracts whereby construction equipment that makes more than a certain level of noise will not be permissible on that particular contract.

I am sure the public works, if Dr. Meyer has them here, can stipulate as to exactly what they do. But I do know they do require this—some other contracts, the quiet construction equipment be utilized.

Mr. Hildebrand: And Mr. Bogost from Hawaii this morning stated that the State of Ohio—the State of Hawaii feels that the state must assume the responsibility for environmental education. Do you feel that the State of California feels in a similar fashion?

Mr. Lowe: From our first recommendation, I can tell you that that is the view of the Department of Public Health, that we made a recommendation that the state establish some office to disseminate and distribute information with respect to noise control, quiet equipment, housing codes, and so forth.

Bills were—with respect to that—are still alive. I don't know what the fate of them may be.

Mr. Hildebrand: Thank you.

Dr. Plager: Just a few quick questions, Mr. Lowe.

First of all, I thought that your study, despite your disclaimer about the value of study commissions and panels, I thought your study is a good one. It's—it's a useful pulling-together of a lot of major issues in this area.

I have no judgment at the moment on the authenticity or validity of the numbers particularly, but I think the kind of issues you raise are well worth pulling together. And I would hope everyone would have an opportunity to read your report.

As a professional researcher, I am not at all uncomfortable about the absence of a call for further research in your report. I think your group did what seems to me to be a very sound thing, and that is build on the available data and start moving now, rather than waiting and waiting and wating for the ultimate in final reports to be written.

Now with regard to the report, some specific questions that perhaps you can clarify for me. Recommendation No. 1 is to establish an Office of Noise Abatement at the state level, and this addresses itself to a question that came up earlier about the role of the Department of Health as a regulatory agency.

I take it the suggestion here is that to establish a State Office of Noise Abatement. It's unclear to me. Perhaps you can help me. Do you have in mind that this agency is primarily an informational agency, or—or a regulatory agency?

The rationale says you need some source for authoritative information, and the first few specific descriptions of the agency deal with the dissemination of information. But then there is talk about developing noise emissions standards for new noise-producing objects and emissions standards for noise-producing objects now in use.

Will this agency—is it the intent of your group that this agency be a regulatory agency, as well as an information disseminating agency?

Mr. LOWE: Well, the—I don't think this was contemplated in the recommendation—in recommending the regulative agency. This would be something that I think the Legislature properly should do.

Dr. PLAGER: What is the meaning, then, of the—of the charge to develop noise emission standards? Would these be legal standards?

Mr. LOWE: Developing the standards could be done by this office, but the enforcement of these standards could very easily be done by some local agency or some arm of the State.

For example, motor vehicle noise emission standards are presently enforced by the Highway Patrol.

Dr. PLAGER: But these would be legally enforceable standards?

Mr. LOWE: Yes, I would contemplate that they should be something that—I think that we—certainly I take the view that any regulation or any standard must be enforceable, or what's the use of it?

Dr. PLAGER: It's hardly worth issuing.

Mr. LOWE: Yes.

Dr. PLAGER: So this agency would, then, have some regulatory function, rather than information dissemination, I take it?

Mr. LOWE: Either this agency or some other agency as designated by the Legislature.

Dr. PLAGER: All right. Turning now to Recommendation No. 3, on compatible land use in the vicinity of airports. Your recommendation calls for requiring airport land use commissions to achieve by zoning compatible land uses in the vicinity of all new airports and in the vicinity of existing airports which were surrounded by land devoted to incompatible uses.

Let's think about airports that are surrounded by land devoted to the incompatible uses. Is there any reason why the public utilities—these airport land use commissions should not zone appropriate land uses, even though there are already existing incompatible land uses if, for no other reason than to flag the incompatibility or perhaps even to bring about amortization of non-conforming uses, which is a standard practice under zoning codes today?

Mr. Lowe: Well, I think if you read carefully the Department of Aeronautics regulation, there is a long period of time permitted for the airport authority to achieve—if they cannot get the noise down to a certain level by other means, they must achieve compatible land use in that area by a certain date.

This is some time in the future. This, again, is realistic and practical. You apparently—but cannot close an airport like LAX, and you can't move 150,000 people overnight. But you can improve their situation over a period of time.

What this addresses itself to is, let's not allow it to happen again, if you have got an airport that's out in the farmland that is going to stay either farmland or other compatible land use.

Dr. Plager: I see.

Mr. Lowe: And also, if you are going to establish a new airport, don't build one that is going to be encroached on by a community.

Dr. Plager: This is aimed primarily at the new airport problem?

Mr. Lowe: That's correct. We consider that the aeronautics regulation itself is the only rational, only reasonable, means that can be used to achieve noise quality around existing airports.

They are too big and too much is involved to make out-of-hand movement of people or movement of an airport.

Dr. Plager: Did your study group consider the possibility of requiring some sort of disclosure requirement in landsale contracts similar to the requirement that appears in some states with regard to housing code violations? Did they consider the possibility of legislation calling for disclosure of noise impact areas?

Mr. Lowe: It was discussed, and there were letters of recommendation from some of the public to the committee. But as far as I recall, no. No conclusions were reached. I think that this is adequate. The disclosure is not nearly as tight as the land use commission dedicated to the proposition that there will be no incompatible land use around this particular airport.

Dr. Plager: Except disclosure could begin tomorrow, whereas the impact of this land planning may be somewhat in the future. We will pass that one.

Let me take up just a moment for a point that our Chairman raised with you, and pursue it just one step further. And that is I, too, observed what seems to me to be an incompatibility, at least inconsistencies between the establishment of 1988 levels for new vehicle noise limits, recognizing specifically that the technology is not available.

At the same time, staying in the tire area, which we had testimony in the Chicago hearings, that the tire noise may be, if not a dominant—the dominant noise, certainly a major contributor of noise, even over the vehicle engines.

But in your tire recommendations, you say, "Don't do anything about it until reliable information becomes available." Who is to produce? We have already noted that inconsistency, but who—who, under your committee's suggestions, is to produce the reliable information? Is this going to be done by government? By industry, or—

Mr. Lowe: It was our understanding that the Department of Transportation right now is under contract with the Bureau of

Standards, I believe, to develop just this kind of information. And it was to be made available to us some time in April of this year.

I don't know. Dr. Meyer, do you know anything about that report?

Dr. **Meyer**: Well, portions of the report have been done, but, as like many other hurry-up efforts, they indicate a need for a great deal more study. We received considerable testimony on this in Chicago. And it's obvious that between the Department of Transportation and the National Bureau of Standards and ourselves that a considerable amount of additional research is going to have to be done, much as one hates to admit that, simply because of some things that have already been said here.

Some of the obvious considerations have relationship of tire design to vehicle safety and relationships of tire design and roadway surfaces, to traction and safety, and these simply have gotten to be taken into account, and including some very fundamental investigations on what are the sources of noise within the tire.

So I think one can be optimistic that future information will be developed, and it will be developed in an orderly manner. But I don't think one can be as sanguine as to say, "You are going to have it by 1974 or '75." We just don't know that yet.

Dr. **Plager**: I might also note on that score that it would appear that sometimes industry can be very helpful in generating the kinds of data and the kinds of studies that would produce this information.

As you suggested earlier, the automobile industry indicated that if you would give them some idea of what you wanted, they would see what they can do about getting there. That might be a useful model for the tire industry as well. I simply would leave that one with you.

It does lead me, though, to one other question, and that is with regard, for example, to the urban transit bus noise limits. Your proposed Recommendation 8 calls for regulations establishing noise limits with regard to buses.

Mr. Lowe, what do you suppose would be the result if the consumers, that is to say, the public transit people—and most of these bus companies are public agencies—demanded buses that, in fact, were quiet? What do you suppose would be the result of that? If their specifications to the manufacturers were for buses which, for example, met that kind of a standard?

Mr. **Lowe**: I imagine they would get quiet buses.

Dr. **Plager**: Yes.

Mr. **Lowe**: I think you have experts here who will testify later from the automobile manufacturers that could stipulate to that. As a matter of fact, I understand they do have buses that make considerably less noise, but they are considerably more expensive and possibly not produceable in mass lots at the present time.

But they do have vehicles and they are working on this all the time.

Dr. **Plager**: Does this suggest that government, as one of the major consumers of industrial products, might simply by specifying in a proprietary sort of way the kind of equipment it wanted from a noise viewpoint and actually bring about a material improvement in our noise environment without laws and regulations?

Mr. LOWE: Unquestionably. I think this is evident in Chicago. They do have some quiet garbage trucks, which they specified that they wanted.

Dr. PLAGER: This leads me to Recommendation 12, where you say that you want to enact legislation that all state agencies require noise control and equipment purchased for state use. I think that addresses itself to this idea.

But why, in Subparagraph B, did you say, "Encourage local government to adopt similar regulations"? Why shouldn't the state require, if local governments aren't responsive enough to initiate it? Why shouldn't the state require that they do the same thing? They are, after all, spending public funds.

Mr. LOWE: I will have to bow to the legal profession. Can the state require a county to buy quiet equipment?

Dr. PLAGER: Yes, sir.

Mr. LOWE: Well, I am sure that most of our legislators are aware of this. Many of them are lawyers.

Dr. PLAGER: I was wondering why your group simply encouraged it, rather than required it, or recommended encouraging it.

Dr. MEYER: It may be a peculiarity of the California Constitution. The Hawaiian one has some peculiarities.

Dr. PLAGER: That's a possibility.

You know of no particular reason, then, policywise, for making that distinction, I take it?

Mr. LOWE: No.

Dr. PLAGER: Thank you. I have no other questions.

Dr. MEYER: I believe Mr. Baron has one comment he wants to make.

Mr. BARON: On the garbage truck, is it Chicago or New York that you meant? I know New York has been working on a quiet garbage truck for quite some time.

Mr. LOWE: It's Chicago that has actually purchased some quiet ones.

Mr. BARON: We have 10 that we are field-testing.

Mr. LOWE: Well, Chicago has also, I understand, purchased some.

Mr. BARON: I just want to make sure that New York gets credit for initiating the project.

Dr. MEYER: Even a national panel representing the government gets parochial.

Mr. BARON: I was just trying to show that the Federal government might set a standard for garbage trucks for all communities to enjoy.

Dr. MEYER: Mr. Lowe, I want to express our appreciation for your being patient with these questions. And I want to echo the comments of the panel members who have said that we have, on our first glance at this report, found it to be an extremely useful and important document which will assist us. I had a chance to see some preliminary versions of this document, and I do think it represents the sort of approach that more states and more communities ought to take, not just on the noise problem, but on all environmental issues of trying to get the best information available.

So thank you very much, sir.

Mr. Lowe: Can I have one more statement?

Dr. Meyer: Yes, sir.

Mr. Lowe: I want to get antagonistic for a minute.

Dr. Meyer: That's perfectly all right.

Mr. Lowe: I would like to not concede what has been described as an inconsistency between Recommendation 5 and the tire noise recommendation. The 1988 level for trucks and automobiles is 70 dB(A). As an overall noise level, it includes tires.

It's understood and implicit in there that this is to encourage automobile manufacturers to develop quiet tires in addition to quiet vehicles.

Dr. Meyer: Yes, sir, but the automobile manufacturers don't manufacture the tires.

Mr. Lowe: The automobile manufacturers, if they have to produce a quiet automobile, including tire noise, perhaps may buy quiet tires for them.

Dr. Meyer: Well, I am not going to get into a debate, because this is not a debate. It's a public hearing. I am simply making the observation that I think the clear-cut statement at the foot of the page there that it is a goal clarifies the point very well. It is a goal.

I would have also echoed the view of the people from Hawaii that maybe it would have been easier not to have written it as a standard and then footnoting it as a goal, but would have perhaps been better to leave it off and have a statement.

But this is your report, not ours. We have no authority to make a comment. All we are just saying is, think of how this relates to other states. I want to keep the objective in view here of what we are doing, of obtaining information which will be useful for the Federal government in providing advice and assistance to 50 states, based on other people's experience, and was just asking the question, you know, of how you would have treated that, and you have answered it very well for us.

(Mr. Lowe's presentation, "A Report to the 1971 Legislature on the Subject of Noise Pursuant to Assembly Concurrent Resolution 165, 1970", included in the record, may be referred to here.)

Dr. Meyer: Might I now ask Mr. Glendon Craig, who is an inspector with the California State Highway Patrol, to come and talk to us about some other statements of issue and interests to the Panel and to the Federal government and to the other states.

STATEMENT OF GLENDON CRAIG, STATE OF CALIFORNIA

Mr. Craig: Thank you.

Mr. Chairman and members of the Panel:

I am Inspector Craig of the California Highway Patrol, and I have with me Inspector Al Cooper also of the California Highway Patrol who will assist me in trying to answer your questions about our noise enforcement program.

I hope here in this brief period to kind of give you a little bit of background on how the noise regulations that are in existence today were developed in the state and what we have done since their development, since they have been put into use. Then we will try to answer the questions to the best of our ability.

The California Legislature became concerned in the early 1940's about truck and passenger car noise which resulted in the purchase of a sound level meter by the California Highway Patrol. Attempts to use the meter to support arrests for excessive noise were generally unsuccessful because no standards had yet been established.

In the early 1950's the American Trucking Association made a number of muffler tests using standard sound level meters. During this same period the Automobile Manufacturers Association adopted the 125 sones limit for all models of trucks, and it was anticipated that all future production vehicles would comply with this requirement. (125 sones is comparable on the average of 85 dB(A) at 50 feet.) Also, during the 1950's the California Legislature considered but rejected two bills which would have required the approval of mufflers.

In 1961 the California Legislature enacted a law requiring the California Highway Patrol to develop measurement standards for maximum permissible exhaust noise and, in 1963, considered and rejected a bill incorporating the limits for vehicles based on the data of the CHP. The Legislature then directed the Department to study the feasibility of enforcement officers using sound level meters for measuring the noise produced by vehicles on the highway. The Department purchased three sets of sound measuring instruments and, in 1965, submitted a report to the Legislature.

In 1967 the California Legislature adopted two Vehicle Code Sections, 23130 and 27160, which established maximum permissible noise limits for vehicles.

2. MAXIMUM PERMISSIBLE NOISE LAWS

a. Vehicle Code Section 27160, sets up maximum permissible noise limits for new vehicles sold in California. The law states that no person shall sell or offer for sale a new motor vehicle which produces maximum noise exceeding the limits specified at a distance of 50 feet from the centerline of travel under test procedures established by the Department. The law specifies noise limits measured on the (A) weighted network for vehicles by category. The specified noise limits that were established with the enactment of the section are automatically reduced to lower levels commencing with models manufactured after January 1, 1973. The levels for vehicles manufactured in 1970 are basically 88 dB(A) for heavy trucks and large motorcycles, 86 dB(A) for light trucks, passenger cars, and small motorcycles with a 2 dB(A) reduction for each category with January 1, 1973.

The test prescribed by the Department in the Departmental regulations is a carefully controlled test to determine, in most cases, the maximum noise output of the vehicle.

The Department has been working with the Society of Automotive Engineers Acoustical Committee to attempt to develop better techniques for determining maximum noise output of all vehicles. Through these efforts a revised test procedure has been developed by the SAE committee; SAE J366, Exterior Sound Level for

Heavy Trucks and Buses which is being adopted by the California Highway Patrol.

Tests of new vehicles to determine compliance with this section are performed in Sacramento on only those vehicles suspected of being too loud. Time and money does not permit testing of all vehicle models.

b. Vehicle Code Section 23130 establishes maximum permissible noise limits for vehicles operating on the highway. The law states that no person shall operate either a motor vehicle or a combination of vehicles of a type subject to registration at any time or under any condition or grade, load, acceleration or deceleration in such a manner to exceed the limits specified when measured at 50 feet from the center of the lane of travel. You will note that this law is an operational law and related to the driver's operating mode; the law is similar to the speed laws.

This law again sets up maximum permissible noise limits by vehicle category and two sets of noise limits dependent upon the speed zone where the vehicle is operating. The code sets lower noise limits for vehicles operating in speed limits of less than 35 mph.

The noise limits of these sections were established by the California Legislature and in most cases are based on research data provided by the Department. Some of this research has been formalized into reports and is available from the Department in Sacramento.

3. HIGHWAY NOISE ENFORCEMENT

a. To set up the noise limits on the highway, the Department first operated three pilot programs to gather information on the enforcement procedure, the noise measuring procedures, and equipment needs. The information gathered from these programs has been used to specify noise measuring equipment and to prepare a Sound Measurement Procedures Manual which sets up a step-by-step procedure for measuring vehicle noise.

Since the pilot programs the Department has purchased six sets of sound measuring equipment, trained six teams, and is in the process of enforcing the provisions of the Vehicle Code sections relating to noise on a statewide basis.

b. The noise teams have been actively engaged in noise enforcement for two years and four months. During the first seven months of 1971, 229,400 heavy trucks have been measured with 1.4 percent in violation; 4,300 motorcycles measured with 8.6 percent in violation; and 460,000 passenger cars and pickup measured with 0.4 percent in violation.

An attempt has been made to determine what is causing the excessive noise. A review of the data from field enforcement shows that of the heavy trucks in violation 32 percent had defective exhaust systems and 1.3 percent with modified systems. These figures come from the field reports and data obtained from other sources indicating that of the current year model heavy trucks in violation, approximately 70 percent are equipped with modified exhaust systems while most of the others are from out of state.

The field information on motorcycles shows that of the machines in violation 55 percent had modified exhausts and 25 percent had defective exhausts. The reports for all other vehicles which is primarily passenger cars shows that 49 percent of the vehicles in violation were equipped with modified systems and 27 percent had defective exhaust systems.

c. The Department, in fulfilling its responsibilities with respect to noise enforcement, has not relied solely upon those sections pertaining to noise levels.

d. Still in existence are Vehicle Code Sections 27150 which requires vehicles to be equipped with an adequate muffler and 27151 which makes it illegal for the operator to modify the exhaust system so the vehicle makes excessive noise.

Members of the Department continue to take enforcement action against individuals who are observed driving vehicles which are equipped with loud modified exhaust systems, even though the vehicles do not exceed the noise limits at the time of observation. Systems particularly watched for are the so-called extractor systems for Volkswagens, and the megaphone type equipment on motorcycles. It seems to be common practice of some drivers, either young at heart or young in age, to modify the exhaust system so they can hear the rear of the vehicle. During 1970, a total of 166,375 enforcement documents were issued for muffler violations.

e. One of the big problems encountered during the highway noise measurement program is the restriction established by the Department for the measuring sites. The restriction in the regulation was adopted after the SAE New Vehicle Test Procedure to assure that no more noise was recorded than was actually produced by the vehicle. We have done some research to determine the effect of various objects in the measuring site in an attempt to lower the restriction to allow the teams to operate in residential areas and locations where trees and shrubs are in the area. We have recently entered into a contract with an independent acoustical research laboratory to determine how much effect trees, shrubbery, parked vehicles, and buildings, in the measuring site, have on the recorded noise levels. It is hoped that the study will provide data which will allow for lowering the restrictions on where noise measurements can be made so that the CHP teams and other enforcement agencies can make noise measurements within residential areas.

4. PROPOSED NOISE LEGISLATION

a. New and more restrictive noise limits are always a topic of interest. The Department of Public Health established a committee on noise in 1970, and you have just heard the report of that committee. Future motor vehicle noise limits was one of the aspects of discussion by the committee who put together an idealistic projection of noise limits up to 1988.

b. The committee suggested that by 1988 the maximum permissible noise limits for all new vehicles, regardless of category, be 70 dB(A) at 50 feet and that the maximum noise produced on the highway after 1975 be 83 and 86 dB(A) for heavy trucks and 74 and 78 dB(A) for all other vehicles. The committee also suggested the approval of mufflers and the certification of tires as to noise. Proposed amendments based on the committee's recommendations were introduced during this session of the Legislature. However, none of the bills have succeeded in passing all the necessary hurdles to become law.

The Department knows from tests that we have conducted and testimony and tests from the manufacturers of large trucks, that there is an economic limit to how quiet these vehicles can be made. Also, the problems that might be encountered if the operating noise limits are made too low are recognized by the Department.

c. Studies indicate that noise increases with vehicle speed and that 35 percent of the passenger cars will produce 75 dB(A), while traveling at legal speeds on the freeways. This same study indicates that 40 percent of the heavy trucks operating on the freeways today will produce 86 dB(A) at 50 feet.

This data strongly implies that the reduction of the noise from existing vehicles is no simple matter and we are sure that economics will play the major role in the reduction of this noise.

d. There are two proposed bills relating to vehicle noise that will most likely pass this session of legislature. One bill requires the Department to draft regulations for the certification of tires for noise. The other proposes to require the Department to study the feasibility of certification of mufflers for noise and establish official muffler stations.

CONCLUSION

Measurement of vehicle noise by instruments is being done successfully in California. The program has been carefully planned with somewhat restrictive procedures. Continuing success of the program is expected and the restrictions should be modified as detailed information becomes available.

Vehicle noise measuring programs, using instruments, are practical elsewhere in the United States provided the same basic care is followed.

Dr. **Meyer**: Thank you very much, sir. That was a very forthright and lucid discussion of how you are doing your job. Mr. Martin?

Mr. **Martin**: No questions.

Dr. **Meyer**: Dr. Dietrich?

Dr. **Dietrich**: I would like to ask a question with reference to a phrase you used on the enforcement measurements that your department is currently conducting. You said they are done on a statewide basis. Yesterday we heard testimony from representatives of the county government here in San Francisco that indicated that they believe that this kind of enforcement was not reaching into the cities.

This led us to believe that this kind of enforcement was not reaching into the cities, and I believe we also heard testimony that this kind of enforcement does not take place on other than state-numbered highways.

I wonder if you could clear this up for me?

Mr. **Craig**: Yes. I think I also stated that one of the problems we have recognized is the site restrictions on measurement. And we have a contract right now with a private acoustical firm to help improve that, however.

Dr. **Dietrich**: The technical question?

Mr. **Craig**: However, we have six noise teams located in six different locations in the state that cover the entire length of the state. Our department is organized into six separate zones. We have six noise teams out.

Now while it is true they are not presently operating in residential areas or in business districts, they do measure the same vehicles that eventually have to operate in those business or residential districts.

Dr. Dietrich: That was going to be another question. Is it possible that there is a city vehicle population that does not, in fact, get out—

Mr. Craig: Yes.

Dr. Dietrich:—onto the roads with the same frequency that perhaps some other or the bulk of the vehicle population?

Mr. Craig: Yes, that's—that's quite possible and quite likely.

Dr. Dietrich: Would it not be possible that some classes of vehicles, such as motorcycles, may fall very heavily into that category?

Mr. Craig: It's entirely possible, yes. And we hope to get around that with the results of the study that we have out, and change a lot of our test procedures.

Dr. Meyer: I guess, Inspector Craig, if I may interrupt, I guess what's bothering my colleague and myself also is it's—and I think I know the answer, but I am asking it for the record—the problem is not so much technology as the—isn't it the statute that says that the State Highway Patrol doesn't effectively enforce within the city limits; is that what the problem is?

Mr. Craig: If you are talking about our department's responsibility, that's true. It does not lie within the cities.

Dr. Meyer: That's the question we are asking. It was said that you had no authority, and, regardless of technology, you had no authority to set up a measuring station to measure the San Francisco Metropolitan Transit Authority or the equivalent of it, its buses in the City of San Francisco.

Mr. Craig: That's true. However,—

Dr. Meyer: That's the question that's being asked.

Mr. Craig: The statute does not preclude the enforcement by local authorities.

Dr. Meyer: Well, then the question I guess we are really asking, is what's the alternative.

Mr. Craig: The alternative is that local authorities could enforce the statute if, in fact, our site restrictions were such that they could find locations within the cities where they could enforce it.

Dr. Meyer: That's the question we are really asking, sir. There was a mixture of two things here.

Mr. Craig: Yes, I think so.

Dr. Meyer: And we are trying to bring out that there is no bar from the city doing this legally, provided you had a technology and a system that allowed them to do it?

Mr. Craig: That's true.

Dr. Meyer: And you are working on that?

Mr. Craig: We hope so.

Dr. Meyer: So—okay. Is that what we are trying to get at?

Dr. Dietrich: That was certainly the point of that question, yes.

I have another question which has to do with some numbers that we get—got from a previous witness. One that sticks in my mind is a number of one percent, the thought that only one percent of the vehicles on the road, which include many noisy vehicles in this witness' opinion, only one percent of those vehicles are presently being picked up by your department, and that is, I believe, as I understand it, evidence that not very much is being done.

First, I would like to find out whether you have some numbers available as to what percentage of the vehicles in a sample of vehicles on the road are actually in excess of your limits as expressed in Section 23130. I think that's—

Mr. Craig: Yes. Do I—Do I have some figures available? I think if you have a copy of my testimony, Annex C of that does contain some statistics relating to that. And I think Inspector Cooper has them there. I might ask that he just go ahead and repeat them.

I have a comment I would like to add about the percentages of vehicles in violation, as soon as he gives you these figures.

Mr. Cooper: We have broken it down into different categories of the vehicles that we do check.

Dr. Dietrich: In order to save time, let me restrict the meaning of my question. Let us say, take the lower speed limit, 35 miles an hour and under, and let me ask a question about passenger cars and motorcycles only.

Mr. Cooper: We found that in motorcycles, the population that we checked, 6.6 percent were in violation at 35 miles per hour and under; 35 miles an hour, 9.3 percent were in violation over 35 miles an hour.

Passenger vehicles we found that under 35 miles an hour, 0.6 percent was in violation; and over 35 miles an hour, 0.4 percent was in violation.

Mr. Craig: If I may add a comment to that. One of the things that a lot of people seem to be hung up on in our noise testing program is the percentage of vehicles in violation.

I think that one of the figures that doesn't show here is how many you bring into compliance, and through our own highway noise testing program we have been able to then do our manufacturer's test and bring literally thousands of vehicles into compliance.

Two small sports model vehicles from two different companies were in violations that we checked with our noise teams. Through the cooperation of the manufacturer, we worked with them and they made modifications to those vehicles that brought them into compliance with our statute.

One very large trucking company, we also found this problem with, and they made the necessary corrections. So we are really talking about thousands of vehicles that we get that aren't reflected in these statistics.

Dr. Dietrich: I appreciate the impact of the new vehicle regulations, but perhaps something else that was brought up with respect to the number of violators picked up for the vehicles in use deserves a question. And that's what I believe is called recidivism, which is the question of what about the offender who has to come in to demonstrate that he has properly adjusted his muffler or, let us say, his motorcycle.

And then he goes out again and removes it. Do you have any figures on that?

Mr. **Craig**: We don't have any figures that would reflect the rate of recidivism for motor vehicles or passenger cars. But I think it's fairly well known among the law enforcement officers involved in this program that there are an awful lot who do exactly that.

Dr. **Dietrich**: So in that sense you are saying that this is a—a severe problem. And I guess—could I interpret correctly that that means that you believe the modified, the deliberately modified motor vehicle, is as severe or more severe a problem than the out-of-repair motor vehicle?

Mr. **Craig**: I think that it is the—the single big—the single biggest problem we have with exhaust noise complaints we get from the public, and those that we detect in our teams and through the routine enforcement is the modified exhaust system.

Dr. **Meyer**: Would the gentleman yield a minute?

That led to a question, sir, which I would like to ask. That's the single biggest problem. And we have heard this elsewhere in testimony from some people in Atlanta. What's the penalty for violation?

Mr. **Craig**: It's a traffic infraction in California. We are probably the only state that has the infraction system other than New York, but certain violations of the California Vehicle Code are considered to be infractions. That is, there is no—no jail sentence, no right to a jury trial, and so forth. Maximum penalty first offense is $50.

The maximum penalty for a second offense within a period of one year would be $100. It would be a very rare occasion when they would get the maximum penalty. And, in many instances, we issue what we term a mechanical warning. If it is in disrepair, we issue a warning only requiring correction. If it is an obviously modified vehicle, in that instance they get a citation and would have to go before the court.

But the Department of Motor Vehicles in the state is not required to maintain a record of mechanical-type violations. So in the infractions, you go back and it's pretty hard to get the record of the guy and see how many violations he might have for those same things, because the courts are not required to send every abstract of convictions for that type of violation.

Dr. **Meyer**: Suppose, as has been envisioned in all the legislation now pending in the Congress—I know it's a touchy subject, and particularly in this state—but suppose the Federal government established some standards and also enacted, through the Congress, legislation which made it a Federal offense to violate the standard by wilfully altering equipment, with a civil penalty, a fairly substantial civil penalty attached. I might add, that there are provisions proposed in the law for sharing with the state half and half the revenue from those violations, provided you set up rules and regulations of a certain sort. Do you think that would be a pretty effective way of organizing a noise control program to deal with this particular problem, if you are going to share in the finances?

Mr. Craig: It might. I think that one of the problems you have right now in vehicle noise enforcement is where do you establish priorities? In the cities and counties, of course, the enforcement on the city streets is primarily by the city police department. We don't go into those areas. They have their priorities. They have what they have to direct their efforts towards. And, frankly, a reimbursement program for noise might be an inducement to get them to direct more effort in this direction.

Dr. Meyer: Particularly if it might not even necessarily have to be in the hands of the police department. Maybe it's in a special agency or something.

Suppose the Federal government didn't tell you what agency it was; just that you have to have a noise control and enforcement agency.

Mr. Craig: I think by our California Legislature's past performance, I would say that they probably would restrict it to a police agency. They have been very reluctant to extend peace officer powers to other elements of the system.

Dr. Meyer: Probably for valid reasons, which I wouldn't debate a minute.

Mr. Craig: Right.

Dr. Meyer: I will yield back to Mr. Dietrich.

Dr. Dietrich: One question. Since you asked—since you suggested that the measurement procedures are complex for very good reasons, and I believe that—I believe you are on the right track by using procedures which insure that fairly frivolous challenges in court are not successful, and I understand you haven't had any serious challenges, perhaps you can tell me whether those complex procedures are something that your department would teach through training programs to local law enforcement agencies?

Mr. Craig: I don't think we would have any problem in teaching the local law enforcement agencies. In fact, I don't think that the procedures are that complex.

Dr. Dietrich: I didn't mean to suggest that they were.

Dr. Meyer: They are not complex. It's just that they have been called that.

Mr. Craig: Yes. I think they have been called complex, and maybe it's through lack of understanding. But we have not experienced any problem in training our people to effectively use the meter and enforce these provisions. And I don't see that much difference between the people we have and local law enforcement that there would be any problem at all.

Dr. Dietrich: You have no on-going training program, other than for your department? As I understand it, you have made it pretty clear that you don't get into the city jurisdictions, and yet there are indications of noise, vehicle noise problems, and you have got a regulation that seems like a well—certainly it's something useful and effective at the state level for controlling motor vehicle noise problems.

So I am asking you, are you willing to share the benefits in the sense that you are making an effort along those lines?

Mr. CRAIG: We have not been approved by anyone to make an effort along those lines.

Dr. DIETRICH: Thank you.

Dr. MEYER: Mr. Baron?

Mr. BARON: Yesterday we heard testimony from several citizens representing themselves and groups complaining about the inadequacy of the California Motor Vehicle law—the limited number of testing stations, the limited budget.

Number one, are you aware of, and what is your critique of the complaints about the—about motor vehicle noise and, two, did some of the suggestions you made about what may happen with others you are wanting to get a simplified testing system and so on? Would they resolve some of these complaints?

Mr. CRAIG: I think that's the biggest complaint we have. You touched on that. And we have already touched on it a couple of times, and that is the site restrictions. But as far as the money and the budget that's allowed for it, our department's budget this year for noise enforcement in these programs is approximately $276,000.

Now that encompasses our six noise teams, manufacturers' tests, the entire gamut. Now that's including the salaries of the people who are involved. That's the whole works.

But we would hope during this legislative session that money which was stricken from our budget, and we would have had no on-going program on highway noise enforcement, has been reinstituted.

It was only through the efforts of an awful lot of people that it was restored in a conference committee and is back in our budget at this particular point.

Dr. MEYER: Dr. Baron, would you yield while I ask an economic question?

I jotted down these numbers of these inspections that you made. I want to be sure I have them right.

229,000 heavy trucks, of which 1.4 per cent were in violation.

4,300 motorcycles, of which somewhere around 8 percent were in violation.

460,000 other vehicles, of which approximately 0.4 percent were in violation.

Somewhere close to 700 or 800 thousand vehicles. And I presume this was for one calendar year, or one fiscal year?

Mr. CRAIG: That's the first seven months of 1971.

Dr. MEYER: All right. That's for seven months, so it can be anticipated that something over a million vehicles, then, at that rate, will be inspected by six teams, which costs $276,000?

Capital cost of the equipment, I assume, is not reflected, nor amortization nor depreciation of the equipment is not included in the $276,000?

Mr. COOPER: Maintenance is figured in this.

Dr. MEYER: But not amortization of the cost?

Mr. COOPER: No.

Dr. MEYER: So something—something just a little bit over 25 cents per vehicle—cost per vehicle inspected? That's a significant point, because we are interested in costs in these things, and again what other people could expect things are going to run them.

The question naturally arises what percentage of the total vehicle population of the State of California is represented by that one million vehicles?

Mr. COOPER: About one out of 12.

Dr. MEYER: That means there are around 12 million vehicles, so it's something less than 10 percent being covered?

Mr. COOPER: Yes, about eight percent, eight and a half.

Dr. MEYER: About eight percent is being covered. But you feel that, because of the sale provisions and so on and the feedback, that this is an effective method?

Mr. COOPER: The heavy truck industry, now when they make changes, they change the whole fleet of their trucks. Like one of them did 300 trucks and changed the whole fleet and put a bigger power plant in it, and right off they were in trouble with the muffling system.

And they came to us and had it checked. And before they ever hit the highway, we had them all changed over. And this is the type of cooperation we are getting from especially the trucking industry in California.

Dr. MEYER: Again, as I said, I don't want to belabor this, and it may be boring to some folks, but it's pretty important to us in helping people get these yardsticks of money.

These six teams consist of how many people on each team?

Mr. CRAIG: Eighteen. And, of course, there is automotive equipment involved there, and your sound measurement equipment. This also includes part of the research that's done by engineers in Sacramento.

Dr. PLAGER: Is that 18 people per team, or total?

Mr. COOPER: A total of 18.

Dr. MEYER: Do they work 365 days a year?

Mr. CRAIG: 1,825 hours a year per man. That's what we figure a total man's output.

Dr. MEYER: Somewhere around—

Mr. CRAIG: 1,825 hours a year, which would be about 252 days.

Dr. MEYER: I was figuring they are hitting somewhere around 500 vehicles a day, then?

Mr. COOPER: Yes.

Dr. MEYER: Around a vehicle a minute?

Mr. COOPER: Well, if they—yes. Of course, it goes faster than that sometimes. But other times it will be slower than that, depending on the order.

Dr. MEYER: I understand your techniques. That seems like a very reasonable approach. The reason I want to get this in the record is that other states and other people, even though you have all had a lot of publicity on it, are going to be reading this, and I just want to get some ballpark figures for our use.

I will yield back to Mr. Baron.

Mr. BARON: What is it ideally you would like to feel comfortable about the noise code, one, as far as decibel reduction? You menitoned economics. Is that stopping you from wanting a greater reduction?

Mr. CRAIG: I think there are a lot of things at this point that we are concerned with in the greater reduction. Not necessarily with new investigation. We, as the department, have not entered into this real strongly.

I think that the manufacturers and the Legislature have kind of gotten together on the new vehicle standards, and they are working out—trying to work out an equitable schedule that they might meet reduced limits.

Where we have been concerned is that the attempts to reduce the on-highway limits or set them down the road a ways, like three or four or five years from now, reduce the on-highway operating levels, and we have made surveys and tests to show that if we reduced to the 70 decibels that was recommended by at least one group in 1975, approximately 97 percent of the cars on the road today would be in violation.

Now there is no way that the average citizen can go out and make that vehicle comply with the law, and that concerns us.

Mr. **Baron**: Does that type of law call for existing equipment, or call for equipment manufactured after a certain day?

Mr. **Craig**: There's two different statutes. Now if it requires for the manufacturers to do it after a certain date, that's fine. That we go along with. I think we have to recognize, however, particularly when we get into the large trucks, there is going to be an economic problem involved, because it involves muffling the entire engine compartment.

And in some places they have to give up load-carrying space to meet the noise-reduction requirement. This, in turn, jacks up the cost of hauling the produce or whatever it is on the highway.

So in all of these things, the economics has to be considered.

Mr. **Baron**: Well, though, this is—there is a hopper. Now who was involved in that hopper? Certainly the Department of Highway Patrol was involved? Who else?

Mr. **Craig**: Well, you mean in making recommendations to the Legislature?

Mr. **Baron**: Right.

Mr. **Craig**: I think that the technical advisory committee that's being established is going to be very much involved. The Department of Public Health is involved.

Dr. **Meyer**: Was this 75 level you were discussing the memorialization from the San Francisco Council or was this just a general figure?

Mr. **Craig**: No, that was, I believe, from the—the Public Health Committee recommended as part of—part of their report, which you have.

Dr. **Meyer**: We heard some testimony today—yesterday about a memorialization or a proposal to the Legislature on this subject. I was wondering whether these were the same things.

Mr. **Craig**: There have been so many this year, I am not sure where they came from.

Dr. **Meyer**: That is not an uncommon situation for government officials to be in when dealing with the recommendations of their various sources of law.

Mr. **Baron**: You made it on just that you wanted to improve testing systems? Are you familiar with—of course, you are familiar with the CBS laboratory technique—

Mr. Craig: Yes.

Mr. Baron:—in Connecticut?

Mr. Craig: Yes.

Mr. Baron: I would like to know your reaction to that.

Mr. Cooper: Well, CBS was one of the contractors that attempted to get this latest contract, but the Wyle Laboratories in Los Angeles now has the new contract on outside testing and we thought when we reviewed the contract that Wyle Laboratories' proposal was a better prospect. And we liked that better, so we are going to go with them.

Mr. Baron: Does this involve developing a new piece of equipment?

Mr. Cooper: No, no new equipment. We are going with the present equipment we have.

Mr. Baron: I am talking about the development of a camera for the DB combination that CBS Laboratories developed.

Mr. Cooper: I am sorry. I am not aware of that.

Mr. Baron: You get a photograph of the license of the truck and a dB(A) reading.

Mr. Cooper: The enforcement is no problem. The truck comes by with the dB reading. We have no problem with the enforcement aspect of it.

In other words, we are satisfied with the enforcement procedures and our ability to apprehend the offender, and the enforcement action is no problem.

Mr. Baron: That doesn't interest you? I think it costs only about $12,000. It is an excellent camera, and it takes a picture of the license plate, and then you can trace that and later on go out and pick this person up on a warrant procedure.

You don't feel the need for that?

Mr. Cooper: They have used radar and different types of activities in this area, and no one proved feasible because of a lot of other problems that goes with that.

Mr. Baron: It's apparent, according to yesterday's testimony, that more reduction, significant reductions, are necessary if complaint levels are to be reduced, and if the environment is to be a little bit more satisfactory near highways.

Are you going to go along with that idea, or—in the hopper, or—or do you have any feelings one way or another?

Mr. Cooper: Well, of course, we would have to weigh the specific proposal before we could really make a blanket yes or no answer to something like that.

True, we certainly would go along with any reasonable recommendations that we saw in the law. We would not obligate ourselves to that only if it places us in an unreasonable or untenable enforcement position. We do not really object to changes in the statute.

Mr. Baron: You have mentioned economics, and I would just again like to bring to your attention that the dollar cost as compared to the ecological cost and the environmental cost, the dollar cost of the hardware or the piece of equipment must be evaluated against the impact on the environment.

The property value, I know in many cases, highways have become the equivalent of the railroads of old, so that if you live near a highway, it's like living on the wrong side of the railroad tracks. So there has been a change and a devaluing of communities, and so forth.

So populated areas near highways have that connotation, and I suggest that you consider those dollar costs, just as we are now thinking about them in terms of airport aviation operations.

When you develop—when a new reduction is suggested, we—the whole purpose, I believe, of the Department of EPA, Environmental Protection Agency, concept is that we are now realizing that by only putting into the hopper the direct dollar cost of manufacturing a given piece of equipment makes the rest of the society pay a lot of other costs that are not to the advantage of society. And I urge that for your consideration.

Dr. Meyer: Excuse me. Go ahead, sir.

Mr. Baron: How many testing sites would you like, ideally, assuming the budget would be no problem?

Mr. Craig: How many sites?

Mr. Baron: Testing teams, rather.

Mr. Craig: Well, that's kind of hard to say at this point. Again, it depends upon the—in California how much emphasis the Legislature places on it. They are the people who hold the pursestrings, and they really dictate what programs we put into effect, and how far we go.

If their feel is to have twice as many or three times as many, then we would have that many. But that's the whole issue, I believe.

Mr. Baron: Where do they get their feelings? Is that from the public?

Mr. Craig: From the public.

Mr. Baron: That is not something you do?

Mr. Craig: It's a priority of funds. Is this the best place to spend the money, or do we need to spend this money in a different location and get a better benefit for a different reason. And that's the thing they are faced with in their budget process every year.

So I really can't say at this point where the priorities lie.

Mr. Baron: Just in general, how does the Highway Patrol feel about this noise abatement function that you are performing, and—

Mr. Craig: Well, in general, we are, at this point at least, pleased with the progress of our program. We think we recognize we have got a long ways to go. We feel we are making a dent and have had significant results, particularly in reducting of exhaust noises with trucks. And we think we can have even more significant results in the future.

We have been happy to be involved in this program.

Mr. Baron: And you do feel that the—a—that the program in general will influence the manufacturers to reduce their noise?

Mr. Craig: Yes, we think it already has.

Mr. Baron: Thank you.

Dr. Meyer: Mr. Hildebrand?

Mr. Hildebrand: Assuming that the new cars meet certain standards, there is no express prohibition to the purchasers of those cars changing their muffler system? You mentioned that there is an antimodification law. If the muffler then is excessive—

Mr. CRAIG: Yes. This is one of the problems that is being attacked in a—in a bill pending before the Legislature this year in that we don't have standards for static testing to go, say, in effect, that this muffler must meet this level at the time it's installed, and this is one of the things that the—some of the muffler installers are coming back at us with. They don't know when they install it whether it's going to comply or not.

And so we are trying to attack that particular problem. Subsection 27151 of the California Vehicle Code makes it unlawful for any person to modify an exhaust system in such a manner as to cause it to increase the noise emitted by that vehicle when first sold.

And it also has been amended this year to make it unlawful for any person to operate a vehicle which has been so modified.

Mr. HILDEBRAND: Would you like to see that law extended so that—to expressly prohibit the modification of muffler systems on new cars, barring replacement, of course?

Mr. CRAIG: I don't think what we would want would be restrictive as to prohibit any modification that doesn't increase the noise. I think that is the criterion that we are concerned with, and if it increases the noise, it's a violation of our existing statutes. If not there are no reasons to prohibit it.

Mr. HILDEBRAND: And do you have any suggestions for—for one of the objectives of this committee is to try and draft some model regulations. Do you have any suggestions for changing the Ohio law, or any problems under that law?

For example, it doesn't cover bus and truck start-up.

Mr. CRAIG: Well, it covers buses, trucks, passenger cars, motorcycles, under any condition of acceleration, load or grade. The—the law I think is adequate.

What we need now is a—again, a method to get into these areas where they are, in fact, starting up and getting a legitimate reliable test procedure in that location. And that's the part we are working on.

Once that's established, I think that our law will be improved 200 percent.

Mr. HILDEBRAND: Thank you.

Dr. PLAGER: Inspector Craig, first I want to establish at the outset my friendliness towards you and the Highway Patrol. I do have a couple of friendly questions for you.

Could you—could you describe quickly for us, or briefly as you may, exactly what is done, what your teams, in fact, are doing that relates to this problem of the testing procedures?

Let's take it first with regard to new vehicles. What does one of your teams do to enforce that new vehicle limit law?

Mr. CRAIG: All right. Let me defer this question to Inspector Cooper. He is the man in charge of our Safety Services Division, and his responsibility is the administration of this—one of his responsibilities is the administration of this program. So let me have him answer that question.

Mr. COOPER: Mr. Plager, with regard to your first question, a new vehicle, of course, they will be out now—in fact, some of them are on the road now, and as our teams are working out here, there is a—there are different sites that a new vehicle of some type may come by that has—has a noise limit higher than that allowed by law.

We stop this vehicle, get all this information, and then this information is then transmitted to our headquarters in Sacramento where we then contact the manufacturer, and tell him what we found and that we want him to bring a test vehicle at such and such a location and such and such a date to go with the driver, which they do.

We run through all the tests and find out, then, if that maybe that one vehicle was in error or whether the whole set-up could be wrong on an individual test.

Dr. PLAGER: How do you know that test vehicle hasn't been treated?

Mr. COOPER: Well, from the reliability of the manufacturers, because if it has been treated, you see, the program is going to continue. These other cars are out on the road, and they are going to be going through the same officers and the complaints will still come in, and they can't very well afford to treat these cars like you say.

Dr. PLAGER: There is no requirement that a manufacturer who is about to sell a new model in the State of California has to certify in advance that his new model will meet the standards of California law?

Mr. COOPER: We do not approve muffler systems per se. All we say is that they have to meet the minimum specifications.

Dr. PLAGER: I am talking about certifying the car as a whole, that it meets the requirements. Is there any reason why this particular technique has not been utilized?

Not the noise certification for new vehicles.

Mr. COOPER: No.

Mr. CRAIG: The certification really, we haven't felt, is necessary. We have a statute on the books that makes it unlawful for the dealer to sell any car which in any way does not conform to the law.

We can go back to him if he is and charge him with a violation of law, if he knew that these vehicles were in violation and that he sold them anyway.

So the certification process really isn't necessary. We feel we have got all the things to get compliance, and we have been getting it.

Dr. PLAGER: And you do not test new models before they appear on the market?

Mr. CRAIG: No.

Dr. PLAGER: So then your actual testing of new models is essentially the same as the way you test any other car? In other words, you don't wait to see a 1972 Exmobile come down the highway and say, "Let's zap that one"?

Mr. CRAIG: No.

Dr. PLAGER: Tell us, what do the people do? Do they sit out on the highway with a meter?

Mr. COOPER: We have a meter, and it's set up. We have locations throughout the state where, within site requirements, where we got the 50 feet and the hundred feet around where the vehicle is going to pass.

Dr. **Plager**: Are these pretreated in any way?

Mr. **Cooper**: They are located and we use them over and over again in different places, and—and, of course, they set the meter up, and they check the meter for accuracy, and they check it before they start and within every two hours they continue to check the meter all the time and make certain they are accurate.

And then one officer reads the meter, and the other officers, that are called chase officers, and, of course, they—they—as the vehicle comes by that's in violation of the law, why then we will stop it and take the appropriate enforcement action that we want to take.

Dr. **Plager**: You curb them and give them a ticket?

Mr. **Cooper**: Right.

Dr. **Plager**: Or you give them a mechanical warning thing?

Mr. **Cooper**: Right.

Dr. **Plager**: On these mechanical warning things, is there any procedure for follow-up?

Mr. **Cooper**: Yes.

Dr. **Plager**: What does that do?

Mr. **Cooper**: A mechanical warning in California, they have 10 days—except for a windshield—within 10 days they should clear it with the office that issued it or the California Highway Patrol office.

If not, we will send them a reminder that it is not cleared. If it is not cleared at the end of 30 days, we will send them a reminder at that time, and after that give them a certain period of time to clear it, and if they don't, then we go through the complaint process and court action, if so desired.

Dr. **Plager**: When it comes time actually for enforcing a fine, I take it this has to be done by court?

Mr. **Cooper**: Court action, correct.

Dr. **Plager**: The same as it is for any other kind of vehicle violation?

Mr. **Cooper**: That's right.

Dr. **Plager**: Inspector Craig, you testified in response to a question, I think, that the modification of muffler systems was a major problem, if not the major problem. Yet California stands nationwide as the—as the place to write to get the loudest possible mufflers that man can buy. The hot-rod industry advertises these things. What is being done, if anything, to address the question of whether these kinds of equipment ought to be allowed to be sold?

Mr. **Craig**: Well, we have—we have a statute that does prohibit the sale of a muffler that does not meet, you know, if it does not comply with all the requirements of law.

However, again, this is one that is very difficult to enforce. As I commented earlier, we don't have a—a static test procedure or a standard for exhaust systems. We only have the drive-by, which is total vehicle noise. AB 1046, which was recently passed by the Senate Transportation Committee, sent to the Senate floor, and I believe now has cleared the Senate and is down to the Governor for signature, provides in there for our department to develop a static test procedure and establish standards.

And then we also have the authority in this statute to require the muffler manufacturers to certify mufflers and exhaust systems to us that it meets these standards.

We also have the authority in here to establish official muffler testing stations if we find the means to do this. There are time limits built into the bill, which gives us a period of time for the study, and then a period of time to develop the rules and regulations.

And in effect, if everything works out well within a couple of years, we would have the statute and the standards to take care of the problems you have indicated.

Dr. Plager: All right. Fine. My final question is in a sense a follow-up to one Mr. Hildebrand asked, and that is that you testified that the California Highway Patrol is happy with this program.

That's interesting, because there has been some question raised as to whether it's an appropriate function for a law enforcement agency to be out worrying about environmental problems like noise.

For the record, then, is it proper to conclude that your agency does not feel this is an inappropriate activity for law enforcement officers and law enforcement agencies?

Mr. Craig: Yes, I think it's safe to say that. We have been involved in enforcing the muffler statute since it was enacted in the early 1920's, and I see no reason why suddenly it would be inappropriate to cite people for defective exhaust systems.

Dr. Plager: Or total noise?

Mr. Cooper: Or total noise. Or anything that has to do with the vehicle on the highway.

Dr. Plager: Okay. Thank you.

Dr. Meyer: Okay. One question apiece, Panel. We have got to take care of all the other witnesses.

Mr. Martin: On the very same subject, just to clarify a point, these noise enforcement teams are special teams. Do they perform other normal police duties?

Mr. Craig: They do, when they are not doing the noise enforcement. If, for example, they have inclement weather or wind to the point that it affects the meter, they can be utilized in other areas.

They are rotated through the program normally, so that they don't stay on it for an extended period of time, and, you know, become useless in their other activities. But they are full-fledged California Highway Patrolmen and officers, and can be used in other functions.

Dr. Dietrich: You have told us of a success story, or success story with relation to efforts to get new vehicle manufacturers to quiet the model or models. I think you mentioned a sports car. Perhaps you might fill that out a bit, if there is another side to it. Have you put any manufacturers out of business temporarily, or permanently, or affected the sale of any popular models of any motor vehicle within the State of California as a result of your activities?

Mr. Craig: No, I don't believe it's necessary to go to that extreme. We have experienced nothing but cooperation from the manufacturers at this point. And even though we have the authority to prohibit the registration of any vehicle of a particular model in the state if they fail to comply with our requirements, it has not been necessary to do so.

Dr. DIETRICH: You have never used that provision against any model of motor vehicles?

Mr. CRAIG: Not on noise. We have on other—

Dr. DIETRICH: Specifically noise?

Mr. CRAIG: No.

Dr. DIETRICH: Thank you.

Mr. BARON: You have had court cases, a few?

Mr. CRAIG: Yes, but—

Mr. BARON: Yes—

Mr. CRAIG: Go ahead.

Mr. BARON: We are interested in knowing what the attitude of the judges has been in a case—

Mr. COOPER: We have had no problems at all in the courts. Of course, the courts have found the subject guilty.

Dr. PLAGER: Mr. Chairman, one final point. I think this is very important testimony that we have gotten from Inspector Craig. Could we get copies of his statement made available to us?

Mr. CRAIG: I have mailed 25 copies to your office.

Dr. MEYER: Well, the improvements in the United States Postal Service are great, but we may not have received them.

Mr. COOPER: We will send you more, Dr. Meyer, if you so desire.

Dr. MEYER: If we don't find them by the end of the day, we would like to have them.

This has been extremely valuable testimony, and I know we have taken a little longer time than perhaps appears to some of the people here needed, but we wanted to elicit as much as we could. And I do thank you for your help. It's been very cooperative and very helpful.

Before we start hearing from a series of industry and industry-related witnesses, I have the pleasure to invite Mr. Nicholas Yost, who may be known to some of you. He is a Deputy Attorney General of the State of California whose primary locale is in the Los Angeles area. But he has done a great deal of work in the field of environmental legislation and environmental activity.

(Recess taken.)

Dr. MEYER: Now, if our guests would return to their seats, I will proceed to hear from Mr. Yost. Mr. Yost, you are welcome here, sir, and we are looking forward to hearing from you.

STATEMENT OF NICHOLAS C. YOST. STATE OF CALIFORNIA

Mr. YOST: Thank you. I feel after some of the comments this morning that I have already been asked the questions, and I will try and integrate some of the responses to those questions into my prepared statement.

Dr. MEYER: Very good.

Mr. YOST: I want to thank you for the opportunity to be with you. My name is Nicholas Yost. I am a Deputy Attorney General of the State of California.

By way of background, I have been our officers' expert in noise law; I was the legal adviser in the preparation of California's airport and aircraft noise regulations, to which you have heard reference. I drafted a certain amount of the legislation now pending in the California Legislature which deals with vehicular noise. I served as legal adviser in the State Department of Public Health's Advisory Committee on Noise, to which you have also had reference this morning, and I have Counsel to the State Environmental Quality Study Council, which has by statute an advisory group made up of professionals in the field of acoustics.

Most recently I have been appointed Deputy Attorney General In Charge of the Environmental Unit of the California Attorney General's Office. This newly-formed section, unlike other sections in the office which represent client agencies, such as the State's air and water boards, is completely self-generating. Without awaiting direction from administrative agencies the unit's nine attorneys look for environmental problems, and attempt to deal with them by whatever means seem appropriate, whether by lawsuit, by seeking legislation, or by dealing with the problem in less formal manner.

I might also mention that in private life I served as co-chairman of the Planning and Conservation League's Noise Legislation Committee with Elizabeth Cuadra, now a Deputy Director of the Office of Noise Abatement and Control. The P.C.L. is a private consortium of over ninety environmental and conservation groups, who banded together to maintain a full-time environmental lobbyist in the California State Legislature.

Two years ago "noise pollution" was an unfamiliar term. Today you are here representing a commendable federal recognition that the problem of noise is pervasive, worensing, and essentially unregulated. The activities of our Environmental Unit have generated a certain amount of publicity, which in turn has generated quite a volume of mail from throughout the State. More Californians have written us complaining about noise than about any other pollutant or threat to the environment. Yet we haven't begun to approach the problems occasioned by noise in the comprehensive way we have dealt with air and water and even land use.

You are here representing the Federal Government. Your presence assumes recognition of the need to do something, so my remarks will be devoted to examining the relationship between the Federal Government on the one hand and the State and local governments on the other. My purpose is to see how the relationship might be constructively employed to abate noise. My viewpoint is that of one who has been actively involved in combating noise pollution on the State and local level through both legislation and lawsuits.

I will deal with three items: (1) preemption; (2) past relationships between Federal and State and local governments, insofar as I am aware of them; and (3) my conception of what those relationships ought to be in the future.

My discussion of the first of these, preemption, represents an office position with which I concur and which the Attorney General has expressed to members of the California congressional delegation. The rest represents my own observations and conclusions and is not an office position.

PREEMPTION

Of all the provisions under current discussion, none would do more to diminish the fight against noise pollution than paragraph 6(d) of the administration's proposed "Noise Control Act of 1971". The bill is in many ways an excellent proposal, but the proposed Section 6(d) would invalidate any State or local noise standards for a broad range of products which differ from federal standards, including, I might add, a certain amount of the material concerning which you have heard testimony today. It would be hard to conceive a measure which would do more to inhibit noise abatement throughout this nation and demoralize those who have been fighting noise than preemption.

Federal legislation should adopt a Federal floor, not a Federal ceiling, for noise standards. Let me speak of four aspects of preemption:

1. What laws and proposals for law exist in California which would be invalidated by the proposed Section 6(d)?
2. Why do states and localities need the authority to adopt their own measures to cope with noise pollution?
3. Why does the nation benefit from state and local experimentation?
4. Why are the arguments for preemption valid?

To take them one by one:

(1) What laws and proposals for law exist in California which would be invalidated by the proposed Section 6(d)? California has on a State level three regulatory mechanisms for noise: the Highway Patrol in vehicle noise; the Department of Aeronautics in airport noise; and the Division of Industrial Safety, which regulates noise in places of employment. These you have heard about today. Each of them represents a complete regulatory scheme, as distinct from the other agencies which may deal with noise in a more peripheral manner, such as the Attorney General's office, Public Health and Public Works.

In the field of vehicular noise, I am going to skip a little on my statement here because you have heard details about it, but you have two different laws, of course, one directed at the manufacturer for new vehicles and one directed at the user for on-the-road vehicles. Both these laws would be invalidated by the proposed Section 6(d). Legislation is pending which would further reduce these limits over the next 17 years.

I might say the legislation which is pending on the new-vehicle noise, which ultimately gets down to 70 dB(A) at 50 feet in 1988, passed its last committee yesterday, so it is virtually assured of becoming law.

I might also add, with reference to that, expanding on something that Ed Lowe said, that we had come out to that Public Health committee the representative from General Motors who works on noise for GM, and we discussed with him the practicability of setting what are now technologically infeasible limits sometime in the future, and he was saying—and I think constructively so—that if we were to do so this would be helpful to him, because he is a noise specialist. He could then return to the manufacturer and have something to argue with and say they had planned noise into their vehicle designs and the components of the vehicles long in the future.

A couple of questions came up concerning vehicular noise, and I might say something about that now. There is also pending legislation which hopefully will deal with the problem of the inability of the Highway Patrol to establish effective mechanisms for measurement in urban areas. As you know, there is now the 50-foot measurement requirement, and then they have the 100-foot queer zone. There is legislation pending, which probably is going to pass, which is going to permit them to adopt regulations to calibrate their instruments to take the existing 50-foot measurements and in fact measure them at a closer-than-50-foot-distance, contingent, of course, on getting the scientific information which would support it and, as Inspector Craig has noted, Wyle Laboratories is right now under contract to come up with that information.

Next, the Department of Aeronautics noise standards. As I read the proposed Noise Control Act it wouldn't affect those regulations, and I hope the proposed act stays that way.

There were several questions that came up this morning, and various people suggested that I might answer them. Let me try to respond briefly to those questions.

First, with reference to the proposed provision that the regulations be inadmissible in civil damage suits. There is a little bit more of a background to this than was apparent, I think, from the testimony this morning.

First, the Air Transport Association has put in legislation the effect of which was going to be to delay the whole works for a year, and they apparently were lining up the airport operators as allies. The airport operators were lined up because of the fear of the civil damage liabilities which were going to be on them. Particularly the Los Angeles Department of Airports, I think they come up with something like three billion, and they said that even though you had a progressive period of time in which there are increasingly stringent limits, as long as those limits were in fact based upon what a reasonable man could take, a court might not wait until the mid-1980's, but a court today might take those limits and put them in today. They said they couldn't afford the $3 billion dollars. So apparently it was just a political compromise to separate the airport owners from the Air Transport Association and see that the whole thing didn't get either put over or killed.

Secondly, the California Law Revision Commission, which is a distinguished body of attorneys and members of faculties at various law schools, had been discussing exactly this problem for some years. They have been studying the problem of whether you could draw some sort of contour which would form the basis of recovery in civil action. They hadn't been able to come to a conclusion, so the whole matter was taken to them, and they suggested that the bill be put in as it was, that it be put in with a self-destruct provision in it which repeals the Section automatically after three years. I am not sure whether that is still in there, but I believe it is. That would mean that the legislature would in three years automatically—or actually before three years, in two years—be confronted with the question of reexamining the whole question of whether these contours established for regulatory purposes should form the basis of recovery in private civil damage action.

Mr. PLAGER: Before you leave that, Mr. Yost, may I just ask, do you have an opinion on whether the bill would be constitutionally permissible? That is, the question was asked whether the legislature could validly exclude from the courts that evidence, making it inadmissible. Do you have any opinion on that? Not an official opinion.

Mr. YOST: No, I haven't studied the problem. I might say the Law Revision Commission, which has studied the problem, didn't have problems with the constitutionality of that. We have in California an entire evidence code in which this could be placed, an entire evidence code which carefully regulates what is and what isn't admissible, and this adds one more thing which isn't.

Several of you alluded to the question of Federal preemption with regard to the aeronautics noise regulations. I share with you, Professor Plager, the feeling that in some measure the fear of existing, as distinct from future, preemption is a bugaboo, and our regulations are premised upon the assumption that they are. As Dick Dyer said this morning, we are trying to do two things, one of which you really brought out quite a bit in your question about regulating away from the airport, but essentially the idea that since, under Griggs vs. Allegheny County, an airport proprietor is in fact liable for damages. Therefore that airport proprietor has to have the authority to regulate that which would occasion damages for itself, and this finds support both in the Federal aviation regulations and the Senate report which formed the basis of the legislation of 1968 which gave authority to FAA to adopt the noise regulations.

Since the proprietor has this right, we are trying to go one step further, and all airports in California other than Federal airports are licensed by the State, licensed in the same way that a doctor or a lawyer is licensed, and using that relationship to make the proprietor do something. It is obviously getting into an unsettled area. We have advised the Department of Aeronautics that they were on good grounds. The Air Transport Association has been otherwise advised by its counsel.

The second argument for the California regulations is that, unlike, say, the clean-air amendments of 1970, which regulate the smog produced by aircraft, which explicitly states within them that no State shall adopt any different regulations, unlike that the Federal regulation act which generally regulates noise has no such provisions, and we argue, and I think on good grounds, that in fact the Federal Government has acted only to certain rather limited measures, one in the area of safety and, two, in the area of noise by tight certification of planes, and the California regulations which are not in direct conflict with either of those are therefore not in a preempted area.

The third question that came up this morning, in the area of enforcement, I am not sure it came across to everybody that there are two completely separate parts of the aeronautics regulations. I realize some of you are fully aware of this, but some of you perhaps may not be.

First, you were dealing with a statute which spoke in rather general terms. At least part of the legislative intent obviously went to a single fly-over, so single fly-over level was put in, as the New York Port Authority has had, of course, for some time. However, it was the feeling of those who developed the regulations that it wasn't the single fly-over that caused the real problem. If you have a level of X, and you have one plane X plus 1, it is not that one plane that is causing the trouble but the combination of 50 planes at X minus 1. In other words, it is the amassing of the noise from these various sources, so aside from the single fly-over there is this footprint concept of, in effect, a contour in which the airport proprietor is supposed to take the lead, but in cooperation with the governmental entities around there, the aircraft owners and operators, the citizens around there. Everybody is involved to reduce the noise impact in this area, and that can be done through a combination of ways, only one of which are land use restrictions. Others are restricting the number of flights, the noisiness of flights, the kind of way the plane lands and takes off, shifting planes from nighttime to daytime, in that studies have shown that people are less bothered some times of day than at other times.

Then how is this to be enforced? Well, keep them separate. For the single-event fly-over there is a standard criminal penalty brought by our county prosecuting officer, who is the district attorney. For the footprint concept there is a far more sophisticated mix of ways which can be used.

First, any violation of any regulations of the Department of Aeronautics can be enjoined, so you have injunctive relief. Two, any violation of regulations of the Department of Aeronautics is a misdemeanor, so you have criminal relief. And, three, any violation of regulations is grounds for license discipline against the license permit held by the airport proprietor, so you have administrative action. In other words, there are three ways that can be used.

The fourth question that was raised this morning was raised by Ed Lowe, who was concerned again with this problem of land use regulations around airports and, specifically, problems in moving people. This is really much less of a legal issue than something which he and I had differed on in the past, and I think he just wanted to give me a chance to express myself.

I think a large number of people, particularly airport operators, think of reconciling problems between airports and the surrounding people by moving the people. I am not sure that that is always an appropriate response. Of course land use is part of noise, and land use around airports is something that has to be regulated, just as the interrelations between land use and air pollution and land use and water are vital. However, many of those who in California have been working for land use authority around airports are airport operators, who want to move the people out, and I am not sure if a person doesn't want to move, if they want to sit there and live with the noise, that ought to be their business. Obviously when you are dealing with new airports I think everybody is in agreement. You want to zone it ahead of time, and you want to prohibit incompatible uses. But in the cases where the people are already there, I think you only have to talk to some of the homeowners' groups over a period of time who are in existing communities and want to stay in those communities to realize that moving them isn't the complete answer. I don't know what the answer is, but I think that ought to be brought out.

Mr. Chairman, you raised the question of variances, and showed a hostility toward them which, in general, I fully share. There was a reason for that in these regulations. The statute said that economic technological feasibility was to be considered in the regulations. Then the question came up to those who were working on the regulations, since the statute itself is very sketchy, how were they going to consider it? One choice would have been to a "desirable level" so high as to be economically and technologically feasible. In other words, set it admittedly above a level which bothered people.

It was the feeling of those developing the regulations that that was undesirable, because you ought to at least have the good goal to be aiming at, and therefore the legislature specifically said that the reasonable man was going to be the test, so they set it at what they felt the reasonable man could take. That meant that in setting that desired level, economic and technological feasibility had not played a part, so that meant it had to play a part in it somewhere else. This is not to say that when you are drafting a model ordinance in the future that you may or may not want to consider economic and technological feasibility, but these were the constraints imposed by the California legislature, and something which if we had not considered them would not be authorized by the legislature, and the regulation presumably could be stricken in a judicial action. Therefore, variances were placed as a means of considering the economic and technological feasibility.

The next area is the Division of Industrial Safety's noise limits for employees at work. These are basically the Walsh-Healey levels applied to places of employment generally. Whether these levels would be affected by the proposed Section 6(d) I do not know. The noise is in large measure generated by "products" as defined in the Noise Control Act. The second sentence of the proposed Section 6(d) purports to exempt from the rule of preemption regulations on the use, operation or movement of such products. Neither I nor anybody I have talked to knows what that means. If a State or locality cannot set a noise level, but can ban the operation or use of the product above a noise level, then the sentence which purports to preempt does nothing. If a State or locality cannot ban the use or operation of a product, then the second sentence of Section 6(d) is a nullity.

By way of further illustration of what we are doing on the State level, let me describe some of the bills that are now pending in the California Legislature, which would be endangered by enactment of preemptive legislation.

Assembly Bill 1043 authorizes the California Highway Patrol to set noise standards for tires.

Assembly Bill 1046 authorizes the California Highway Patrol to set noise standards for muffler-exhaust systems.

Senate Bill 692 authorizes noise standards in building construction.

Assembly Bill 2390 and Senate Bill 689 both set noise standards for machinery.

Assembly Bill 2342 sets standards for off-highway vehicles generally.

Assembly Bill 519 and 578 set standards for snowmobiles.

In addition to what the state is doing, California's cities and counties are becoming increasingly active in noise legislation. The cities of Beverly Hills and Inglewood have adopted comprehensive noise ordinances. The League of California Cities, which is the association representing the municipalities of this State, has drafted and submitted to the cities for adoption a model noise ordinance. While I have some problems with some of its provisions, it does represent an attempt to deal with urban noise problems on a unified basis. The ordinances have in common an attempt to limit noise as measured at the property line. Much of the noise that might violate the ordinances is caused by machinery such as power lawnmowers, which would be within the definition of "product" as it appears in the proposed Noise Control Act.

In brief, California, its cities and its counties have enacted or are considering a considerable amount of legislation which might be preempted by the proposed Section 6(d).

(2) Why do states and localities need the authority to adopt their own measures to cope with noise pollution?

Conditions differ. The whole idea of creating a Federal system is based on the assumption that different people in different places have different wants and needs. I think there are three aspects to this.

First, people in different jurisdictional entities have different values. Those in a predominantly residential community will be more insistent upon quiet than those in an industrial area. Whether we are talking about two cities or about two zones within a city, this sort of distinction is completely appropriate. There is no good reason why the Federal government should tell those desiring quiet that they cannot have a community as quiet as they desire, even if it involves restrictions on the noise generated by "products" as defined in the Noise Control Act.

If one city or State were to propose an entirely different approach to noise control, why shouldn't they have their chance? It is certainly not unreasonable to me that some local entity might choose to apply the approach taken by the Federal Government in regulating air pollution in the Clean Air Amendments of 1970. Primary and secondary ambient levels are set up based on health and welfare, and plans are to be devised to meet those standards. I certainly see no inherent vice in a State or city applying this approach to noise pollution, even though it might involve setting product noise levels lower than those adopted by the Federal Government.

Second, State and local governments are more responsive to community needs than is the Federal Government. Particularly for those of us who live on the opposite coast from the nation's capitol, Washington is a pretty remote place. It is much easier for a citizen with a problem to go down to city hall than to Washington. Even Sacramento is not that remote. A round trip air fare from Los Angeles to Washington runs around $300. A round trip air fare from Los Angeles to Sacramento is $30-some dollars. In a day when people of all different shade of political thought are stressing the need for more responsive government, precluding State and local action from meeting the problems that concern the people of those states and localities is a backward step.

Third, removing the power to better our environmental conditions from California to Washington will demoralize those who work hard at the State and local level to secure enactment of good legislation. The prospect of seeing past years' work undone and future efforts precluded by federal preemption exerts a chilling effect on the good work of citizens concerned about their environment.

(3) Why does the nation benefit from State and local experimentation? Here I can do no better than to quote from the second annual report of the President's Council on Environmental Quality, issued in August of this year:

> "In our system of government, the States are experimental laboratories for a variety of solutions to common problems. And State innovation frequently sets a precedent for Federal action."

I will skip through part of this quote and then resume at the end, after a list of examples.

> "Through creative new State approaches and national acceptance of the most successful, the Federal system has profited."

As CEG has stated, through State experimentation the nation has profited. The proposed Section 6(d) would deny the nation the opportunity to profit from State and local action involving a substantial portion of the causes of noise pollution.

(4) Why are the arguments against preemption invalid? Pardon me. It should have been: Why are the arguments for preemption invalid.

The arguments for preemption are not made by the advocates of more stringent abatement of noise pollution. They are made by manufacturers who dislike the multiplicity of levels that confront them in the diverse nation. Their arguments concerning the burden created for them by different standards seems specious. Nobody is telling a manufacturer that he must sell any particular state. If he wants to sell there, he can meet the standards the people of that State choose to adopt. As a practical matter no State or locality will set a standard so low that the necessary item cannot be sold. If that item can be made quieter, why should not the people of that State be enabled to insist upon it?

By way of illustration I would invite your attention to a table which appears at Page 449 of the hearings on Noise Control held this summer by the Subcommittee on Health and Environment of the House Commerce Committee. The chart was submitted for the record at the chairman's request by a representative of the motorcycle industry. It is based on tests run by the California Highway Patrol. The chart gives the noise levels in dB(A) at 50 feet for various types of motorcycles, broken down by manufacturer and by type of engine.

The differences are amazing. For instance, in the category of four-stroke cycle engines, 750 cc, the Triumph makes 89 dB(A), while the BMW makes 75 dB(A). When you consider that decibels increase logarithmically, we are getting some very real differences in noise from what appear to be comparable machines. And, for the life of me, I can see no good reason why people in a given area should not be able to insist upon the quieter model, whatever the Federal Government chooses to do.

Then, the second major heading, past relationships between the Federal and State and local governments.

My experience with the Federal Government in noise abatement activities has been limited, too limited. That is why I am so pleased to see you holding this hearing today. Indeed, in the few short months since the Office of Noise Abatement and Control was formed, my contacts with it can only be described as helpful and productive. It is good to have the receptive ear in Washington, an office devoted to dealing with the shared concerns of noise pollution.

The only other agency with which I have had much experience is the Federal Aviation Agency. That experience has been of a different sort. Several illustrations might help.

First, in 1970 the City of Burbank imposed a nighttime curfew on jet take-offs from airports within its boundaries in an effort to diminish nighttime noise pollution. The airlines sued Burbank. While the State of California filed an amicus brief on behalf of the city, the FAA filed a brief amicus curiae on behalf of the airlines.

Two, in 1971 the City of Inglewood, which is located beneath the landing pattern at Los Angeles International Airport, enacted an ordinance which bans flying outside the flight path that the Federal Government itself has set. The FAA sued Inglewood to invalidate its ordinance.

Three, in 1971, while the California Legislature was considering a bill relative to this State's airport noise regulations, the FAA wrote a lengthy letter to the committee chairman asserting the invalidity of the whole California regulation. The Director of the California Department of Aeronautics was forced to write a letter of rebuttal setting forth the inaccuracies of the FAA letter.

Four, and by way of comparison, I am not aware of any lawsuit brought in California by the FAA to abate noise, nor of any intervention in the state legislative processes by the FAA to further noise control.

At any rate, it's good to see Office of Noise Abatement and Control in operation.

The final major segment, what ought future federal relationships with state and local governments be to further noise abatement?

There are several ways in which we can and should be cooperating to reduce noise pollution.

a. Federal standards. In opposing federal preemption I by no means oppose federal standards. I think the adoption of such standards nationwide a fine and constructive thing. Such standards should, as I said before, provide a Federal floor, but not a Federal ceiling. That floor will benefit people in jurisdictions where the legislatures have shown less concern for environmental control. It will also diminish the chances of industry threats to remove to states with less stringent laws.

b. Money. You have heard this before and you will hear it again. States and local governments are strapped for money. They will welcome yours. In saying this I would like to note one thing, to whom the money is to be paid. The usual course seems to be contracts with private entities for particular research projects and grants to public administrative agencies. Between the Federal and State administrative agencies the public attorney gets lost.

As you are aware, in most states, the Attorney General and the local prosecutor, who in California is the District Attorney, are independently elected officials. Money to a State administrative agency charged with noise abatement is not apt to get to the public attorney, but it is that attorney in whose hands ultimate enforcement lies. Recently the National Conference of Attorneys General went on record as requesting that legislation now pending in Washington relating to water pollution be amended to provide for grants to attorneys general as well as to administrative agencies. Public attorneys in fact play a key role in the abatement of any pollutant, and vigorous action on their part needs money as much as does administrative enforcement.

c. Technical Advice. Here we are talking about two things: acoustical expertise to decide what has to be done and legal expertise to convert the acoustician's recommendations into law or regulation. These two aspects have been kept separate too long, and that is unfortunate. In my view the single most important thing you can do is to combine acoustical and legal advice in a meaningful way, so that State legislatures, county boards of supervisors, and city councils will receive practical proposals upon which they can act. What are the components of this?

One, first you need acoustical advice on what ought to be done, developed with an awareness of any legal constraints on what can be done. I would suggest that public conferences, hearings, or the opportunity for comment on published proposals be used. There have been too many inadequately-prepared recommendations with defects which opportunity for a little more public comment could have cured.

Two, legal draftsmanship is an art. Form statutes should be prepared by qualified draftsmen in consultation with acousticians. To be really sophisticated a draftsman familiar with the laws and drafting techniques of each State should go over the model and adapt it.

Three, finally and most importantly, you should combine the two pieces of work in a way that will be helpful to those who have to work with and enact your proposal. I would suggest a packet which combines a draft of proposed legislation, a statement of the reasons and need for it, answers to questions that might be posed concerning it, a summary of the acoustical findings that support the bill, and a discussion of constitutional or other legal issues that might be raised.

Too often the acoustical research and the legislative draftsmanship proceed independently of one another. A research project carefully done and on the shelf in an acoustical library is of no value when a question is posed in a committee hearing for which nobody present has an answer.

In summary, I believe that nothing would be more helpful to the legislator, administrator or constructive citizen than a packet such as the one I have described. It provides what is necessary where it is necessary to enact good measures to diminish noise. The Federal Government would be providing a true service to States and local governments.

In summary, noise is a pollutant which should and does concern us all. Its abatement requires the cooperation of all of us. I hope that I have been able to suggest ways in what that cooperation can be fruitful. Thank you for inviting me to meet with you.

Dr. **Meyer**: Mr. Yost, thank you for a very forthright statement of your position, which, it is no secret, is not completely identical to that of the Chairman or the agency holding this hearing. Again, I don't propose to get into a debate on the issues with you.

Before I ask my colleagues on the panel to direct any questions they may have—and I will ask them, because it is getting late, to sort of be a little brief on this—I would like to make some comments about two or three things in here, since I am in the Federal administrative structure.

Your suggestions—and I will start with the end of your testimony and work back, because sometimes that is a good way of doing it—your suggestions with regard to the needs and what we ought to do lie at the very root of a major portion of the administration's bill, and which is also incorporated in the other bill, namely, broad technical assistance programs to the States and their political subdivisions. We envision doing just exactly what you have suggested here. As a matter of fact, I am intending to use these comments within our staff in working up some of our action programs because you brought out some thoughts which are very germaine to what we need to do. Some of this we can do without legislation.

I noted with much interest, as a matter of fact, this recommendation about financial support to the other elements of the State besides just administrative agencies, such as the office of the attorney general. As I read the administration's legislative proposal, the portion dealing with technical assistance deals with assistance on enforcement, and, depending on what our council comes up with, I would infer that that would give us authority to support a State attorney general's office in developing a vigorous enforcement program. But in the event we did preempt you and you were given the authority to enforce our law, then you could share in the fines, and I presume you would help finance your attorney general's office, hopefully, by not having those revenues going into the general fund.

You see we are dangling a little carrot with our stick.

Mr. Yost: That fifty-fifty sounds attractive.

Dr. Meyer: Those in the audience who are not familiar with the law might be interested to know that some of those fines go up to $25,000 each day. Each day is a separate event, so it might be of some interest to state enforcement officials.

As I said, I really don't want to get into a debate with you about preemption provisions. The Federal Government's administrative position on this is well documented. I can merely say your comments certainly are pervasive, and will be given consideration.

I think, though, that I ought to say something about the preemption business. I am sure my technical colleagues as well as some of my legal colleagues would agree with me—what we are really saying here is don't get so fascinated with just the source control. There are other ways of controling noise besides setting standards on point sources such as vehicles, particularly when you are talking about construction sites. If you remember, as you double the energy you increase the decibels, three dB on a sound level meter, six dB overall sound pressure level, resulting from a doubling of the source energy of three dB of actual acoustical sound level. So you can control the number of sources on a site. You can put barriers. You can even, in your State, your Highway Department—and I say it is regretable that they didn't find themselves free to find one person that could come and testify today, even with their overwhelming problems in Sacramento—but we understand they have done a great deal on barriers and things of this sort, that the State could do regardless of the Federal standard.

As I say, I don't want to get into a debate. I want to remind that it is not just vehicle standards we are talking about, but we strongly feel that States and political subdivisions must have the right to determine what it is that reaches the listener's ear.

Of course, there is one thing that you need to keep in mind, as you rightly say, that people in different jurisdictional areas do have different values. We certainly agree with that.

The only last thing I would say on preemption is I recollect a number of years ago there were some problems about Arizona oranges and grapefruit and California oranges and grapefruit, and there still are. I think we must keep in mind we are talking about things that affect interstate commerce.

The difficulties that would be entailed if there were fifty state standards for motor vehicles and vehicles moving from Arizona to California—that is the only direction they obviously would come would be from Arizona toward California—would not be able to operate on your highways because they were in violation of your standards. I think you would have to take into account that very real difficulty.

As I said, these are things which certainly the State of California is entitled to its views, and Congress is going to have to make the decision on this, not ourselves, certainly.

Sheldon?

Mr. PLAGER: On behalf of the great midwest, of which admittedly Arizona is not a part, I wish to take objection to your suggestion that cars only travel one way. I have indeed on occasion seen California license plates in Illinois. He was lost, but that is beside the point.

Mr. YOST: So it must have been an Illinois driver.

Mr. PLAGER: Or a stolen car.

Addressing ourselves more directly to the statement you have made, Mr. Yost, I am really somewhat at a loss, and I know this will amaze the panel and the audience, I am really at a loss to ask you any questions because I think your statement is an outstanding summary and carefully thought-through presentation of some of the most difficult legal issues we have to deal with, and I can only say I admire the thought that has gone into it and the style with which it has been presented.

Let me ask just a couple of quick questions.

Dr. MEYER: Dr. Plager, I knew you were still leading up to a question.

Mr. PLAGER: Well, I don't want him to feel that I am discriminating.

Again taking this from the back forward, which I do find helpful here, you call for a merger of law and technology in the development of technical advice. You emphasize or at least note the usefulness of a kind of packet of materials. Let me ask you this, how would you feel about the sponsorship by EPA or otherwise of not only documents but perhaps teams of experts, multidisciplinary teams with expertise both in acoustical knowledge and technology and in legal material? The reason I raise that is at the moment in the State of Illinois we have a group called the Illinois Task Force on Noise, sponsored by the State, the State Institute for Environmental Quality.

I happen to be a member of that task force, and we have just such a package of acousticians, engineers and lawyers, and we are in the process of examining a wide range of regulations for control of noise, and it has been kind of an exciting and, I feel, productive operation, and I find as I go to these hearings and around the country otherwise that one of our real problems is to meet the need at any given time, not so much in terms of documents which nobody reads, but in terms of expertise available as resources. Would this be included in your call for that type of support?

Mr. YOST: I think that is an excellent idea.

Part of the background of what both I was saying and what you were saying, I think, gets to the problem of getting expertise to the legislature. Here we are dealing, say, with the interrelationship between acoustical expertise and legal expertise.

I work for the Attorney General's office, so I can arrange my schedule so I can be present at a hearing on a bill on noise. To get somebody there with an acoustical background hasn't been that easy, and you need both there to answer the questions that come up in the committee.

Elizabeth Cuadra, who is now a Deputy Director of your office, and George Wilson, who is a private acoustician here in the Bay Area, each of them was President of the professional society, the

Acoustical Society of America and the chapter in that area. Each of them has taken days off and come up, without any compensation, not even travel expense, to Sacramento to testify. I know Liz Cuadra used to take a day of vacation each time she came up on one of these bills. You know, these bills are coming up for hearings all the time. There ought to be some sort of way of getting the technical people there without putting it completely as a burden upon private citizens who happen to have the expertise to take it out of their own vacation.

Mr. Plager: With regard to the preemption issue, I am just a little bit schizophrenic on that one. At the moment I am sitting as a member of this Federal panel, and I think it might be inappropriate for me to bite the hand of the man in the middle. (Laughter) But I am also a consultant to the State of Illinois, and your analysis of the preemption issue I think is very inciteful. I am quite serious about that, and you marshall the arguments well, and I think you zero in on a problem that is perhaps shared by California and Illinois and other States that are entering into this new area of concern. I also ran into the ATA's in hearings the State of Illinois held last winter, and I had advised the State of Illinois that they do have the authority to regulate the practices of their airport proprietors, very much along the lines you describe.

I would be very unhappy, I think, to see the States preempted, and I say that, Mr. Chairman, with all due respect. What do you suggest for those who happen to have that perception of the problem? What do you suggest is the best way for people interested in assuring that the States can continue to move along with the Federal Government as partners in this venture, what do you suggest is the way we can marshall forces to insure that Congress does not preclude this?

Mr. Yost: Write your Congressman. The Attorney General of California has now written every member of the California congressional delegation on this, and he is following it up with letters to members of the Commerce Committee. All across the political spectrum the California representatives have been very responsive, both liberal and conservative, in opposing preemption, but perhaps for different reasons.

But if the same thing could be done in other States I think it would be very helpful.

Mr. Plager: I have nothing further. Thank you.

Dr. Meyer: Mr. Hildebrand?

Mr. Hildebrand: No questions.

Mr. Baron: I probably have not come to a definite conclusion on this question of preemption, because it is a complex issue, and I worked on a State public health level in Illinois at one time, so I am a little leery of some of the ramifications.

However, some of us are concerned about the movements of States and localities. You talk about local responsiveness. Now, the Mayor of Seattle mentioned that 250 thousand people signed a petition. I must say I forget what the petition—it had something to do with noise. And yet the City of Seattle apparently could do very little as far as effective noise abatement program was concerned.

We also hear that one of the reasons for the airport problem—and I am one of those who feel very strongly that source control is the priority—but one of the reasons is the failure of local communities to zone properly. I just would like to know, and this would help you in butressing your argument against preemption, what would fill that tremendous vacuum which exists where States and localities do not move to do the job that has to be done to protect the environment?

Mr. Yost: Well, I think, as I indicated in my statement that Federal standards are a good thing, so that when a State or a local government isn't acting, the Federal standards are coming in which will bring in a Federal floor. It is just I don't want the Federal Government to be limiting more restrictive actions by the States and localities.

Mr. Baron: One last thing, that packet on the effects of noise, the packet you mentioned, were you thinking of including the effects of noise as well as the information of the acousticians?

Mr. Yost: Sure.

Mr. Baron: I happen to believe that more than lawyers and acousticians should be involved in legislation. Noise is a peculiar pollutant, and I think someday it is going to find its own niche. I think we will have to seriously consider what you are proposing, multi-disciplinary teams, in working on noise legislation. Otherwise we are liable to have very impressive-looking standards and numbers and so on which in effect—and we see this in some degree in our highway legislation, with all due respect, we also have it in New York State—has not really solved the problem of the impact of highway noise on residences and so forth. So I just raise this issue, that the concept of multi-disciplines be enlarged.

Mr. Yost: That is a good point.

Dr. Meyer: Dr. Dietrich?

Mr. Dietrich: I wanted to say first that I was very, very pleased with the amount of emphasis that you gave to the multi-disciplinary approach in this area, but rather I would like to turn away from that and say that I was very surprised by your interpretation of Section 6(d) of the administration's bill with respect to preemption for use. It brings to mind the recent proposed rule-making action by the National Highway Traffic Safety Administration with respect to maximum speed limit capabilities of motor vehicles. I am unaware of any concern in the office of the chief counsel of that agency, which is part of D of T, over any conflict there with local authority, ability, to set speed limits that are lower.

On reflection I guess I come up with the thought that, gee, this must have to do with the aspect of voluntary control that is available to the motor vehicle operator. Don't you believe that some middle ground might be found which would enable States to set lower limits for noise output from vehicles or other sources when that can be shown to be within the voluntary control of the operator and, let's say, find that it is denied to the States when it is outside the voluntary control of the operator?

Mr. Yost: Well, I am not sure I would want to restrict this that much.

Mr. **Dietrich**: I would like your comments on it.

Mr. **Yost**: Yes, I see what you are getting at, and certainly it is a reasonable suggestion. But I don't see why the absolute noise output that a manufactured item can make should be limited on a geographic basis. Independent of what the operator can do, if the people in one place want quieter cars than people somewhere else, I don't see why they shouldn't have them.

Mr. **Dietrich**: I understand your position in that regard.

Mr. **Martin**: Since I have a slightly different view from my friend at the other end, I think preemption is important. I won't argue that point.

But one of the things that comes out in this argument against preemption seems to be the assumption that "Gee, the Federal Government ain't going to do the job. We can do it better." I sometimes wonder, why do you feel that you would set more restrictive standards in an area where, unless you have a specific unique need, like air pollution, which here in California is unique, why would you do any better? Why wouldn't the Federal Government set as restrictive a standard on noise for a new vehicle at the source?

Mr. **Yost**: I think that is a good question, too, and my answer would be, look at what in the past has happened. California has generally, in noise legislation, gone further than other parts of the country. All parts of the country are represented in Congress and administrative agencies and so on, and I would just anticipate California's continuing to go further.

Mr. **Martin**: That is assuming there is no Federal agency with the specific requirement to improve the environment. This is the specific charge that EPA has, and by preemption you are basically saying that unless you can regulate the sale of new vehicles you can't control the noise of a State. I can't see this. I can see there are one hundred and one different ways you can control noise without controlling the source.

Mr. **Yost**: But to use the converse of that argument, there is no reason to have a preemption provision within the administration's noise proposal, because if in fact the Federal Government is going to set it as stringently as anybody can ask for there is no reason to have something preempting States and localities from taking more stringent action.

We are really dealing with an imponderable, because we don't know what is going to be done. I just don't want, in advance, for States and localities to be precluded from taking more stringent action.

Mr. **Martin**: Well, except the Federal Government, the old, grayhaired wise father in Washington, might do a little better in not letting a local municipality's emotions run away with itself in setting the standards for manufactured vehicles. A local governing body could certainly limit the use of a vehicle in its own locale.

Mr. **Yost**: Well, again I am not sure what the difference between use and a standard is, as it appears in those two sentences in Section 6(d). But I am also not sure that the emotions and deeply-held feelings of the people in an area are not appropriate in considerations.

Mr. **Martin**: I am not saying they are not appropriate considerations. I am saying they shouldn't be dominant.

Mr. **Plager**: Mr. Chairman, may I enter into this, because it is an important issue.

Dr. **Meyer**: Dr. Plager, you may enter into it. I have a question also from Dr. Dietrich here. Go ahead.

Mr. **Plager**: I am sure Attorney General Yost doesn't need my help, but I would simply throw in a comment, and one thing, I think, that leads to a concern about Big Brother Federal Government solving all our problems for us, among other things, is perhaps a philosophical dislike for having to turn to the Federal Government for dealing with what should be essentially the responsibility of local and State governments. But perhaps more importantly is the recognition of the fact that some Federal agencies have historically been captives of the industry to which they were assigned the responsibility of regulation. I do not at all suggest that that is the case with the agency with which we have the pleasure of being associated. It is a new agency and we don't know yet. (Laughter)

Dr. **Meyer**: The only comment I could make on that one is that if it is going to be a captive of industry it is going to be a captive of all industries. Therefore it would have to be a captive of very conflicting segments of industry, which is one of the safeguards of EPA.

I would also make an observation that it is rather intriguing to me to hear always as a justification that everything ought to stay purely restricted to the States and municipalities, and I would, as an aside before going on, point out that there is no question that I have certain views about States rights. We do hear testimony, though, such as we heard yesterday, reflecting the great frustrations of local citizens with their local and State governments, and their feeling that, au contraire to the picture depicted, that just leave it up to us and everything will be all right. There are groups of people expressing great fears of reprisal or inability to be heard by "city hall" and the "state house". Now, that is a problem that isn't just restricted to dealing with the Federal government. It is a problem of modern government. It is one we all have to come to grips with.

Mr. **Plager**: Your point could not be better made, Mr. Chairman, and it is exactly that point that I think Mr. Yost speaks to, because he is saying, not that the Federal Government should do it, and he is not saying only State or local governments should do it. What he is saying is it is a mutual responsibility. Neither should preclude the other from assuming the leadership, and I think that is the real value of what Mr. Yost is saying. I think that cannot be emphasized too strongly. I think he is really saying let's let the leadership emerge in whatever level of government is willing to take that leadership, and not preclude anyone from exercising that kind of responsibility.

Mr. **Yost**: I think you put what I was trying to say very well.

Dr. **Meyer**: Along those lines, one last question or comment before we move on. Dr. Dietrich?

Mr. Dietrich: This has to do with this question of the multidisciplinary approach to the preparation of regulations and statutes, and perhaps it touches on the question of leadership.

You mentioned, in a way that almost makes me assume in an improving way, the idea of form statutes, and I just wonder whether you really believe that this sort of thing is feasible under the various kinds of State constitutions and administrative provisions of the State codes. Would you really like to have somebody wander in and tell you this was pretty much the form it ought to take?

I will let you answer that, if you will.

Mr. Yost: Yes. That doesn't mean we have to accept the form, but it would be a useful function to provide it. In fact, there are legal groups, the American Law Institute and so on, which prepare model statutes in a variety of areas. They should be adapted to the local use, but having the model to work with is a constructive thing.

Dr. Meyer: I think that is a very important consideration to realize that when we are talking about model codes we are not trying to say that some code which EPA might prepare in working with the National Institute of Municipal Law Officials and State Attorneys' General and the citizens' groups and the manufacturers, which is exactly the way we propose to do this, that when that was sent out to fifty State legislatures and several hundred cities that that automatically would be ipso facto, in toto, enacted. Rather it would set a pattern within which local usage will dictate changes.

Yes, Mr. Baron.

Mr. Baron: We do not hope to answer it, but just to say that this whole mix of mutual responsibility which you so well put, that we do not forget participation by responsible citizens.

Dr. Meyer: We have got to have that. I feel very strongly, as does Administrator Ruckelshaus of the EPA, that we must have greater participation by the affected interests, and that means not only the industrial and the governmental units but also the private citizen.

Nick, thank you very much. You have brought a very stimulating discussion here.

Before I go on let me do the following, if I might. This is a long session. All of these things turn out that way. We have got approximately ten individuals scheduled to appear. Now, first I would like to find out if these people are still here. Is Mr. Lucia of the motorcycle industry here?

(Mr. Lucia here rose.)

Dr. Meyer: Are Messrs. Young and Howe, representing the Engine Manufacturers Association, still here?

(Messrs. Young and Howe here rose.)

Dr. Meyer: Is Stephen Mayne, of the firm of Dinkelspiel, Steefel, Levitt, Weiss & Donovan still here?

(No response.)

Dr. Meyer: Is Mr. Arthur Snyder of Los Angeles still here?

(No response.)

Dr. **MEYER**: Is Mr. Beliczky, of Akron, Ohio, here?

Mr. **BELICZKY**: Yes.

Dr. **MEYER**: Okay. I am sorry these people left. They could see this was going to be long.

Is the representative of the Automotive Parts and Accessories Association here?

(A gentleman in the audience here rose.)

Dr. **MEYER**: Is Mr. Larmore, of CIMA, Construction Industry Manufacturers Association, here?

Mr. **LARMORE**: Yes, sir.

Dr. **MEYER**: Is Mr. Buchyoltz here, of the Plaster Information Center?

(No response.)

Dr. **MEYER**: Is Mr. Randall Hurlburt, a colleague of ours of long standing, here?

(Mr. Hurlburt here rose.)

Dr. **MEYER**: And Mr. Van Demark, of motor equipment association?

(Mr. Van Demark here rose.)

Dr. **MEYER**: Now, I have two alternatives.

Mr. **JOHN SUTTER**: Mr. Chairman, I am also on the list, or should be, John Sutter, of the Bay Anti-Noise Group. I am also an Oakland City Councilman.

Dr. **MEYER**: Mr. Sutter, unfortunately there was a mistake and you were put on here for tomorrow, but as long as you are here, it makes, as I said, my task a little easier.

Mr. **BOB SMITH**: Mr. Chairman, a citizen from Ontario, California, Bob Smith, is also here this evening.

Dr. **MEYER**: All right.

Dr. **DONALD A. BELT**: Mr. Chairman, I also was supposed to be on that list, Dr. Belt, of Stanford Medical Center.

Dr. **MEYER**: I don't know how that wasn't—

Well, what I was going to propose is this. My colleagues and I determined to give everybody a chance to say their say, not only because they have something they want to say but because it is important for us to hear it. Now, it is ten minutes to 5:00 by my unreliable clock, which is somewhat confirmed by that one up there. I can do one of two things, that is, we can run right straight through without a break, which is a long and horrible thing to do, but we have done it before. Or we could maybe have a couple of more witnesses and have a recess and come back this evening.

Following due democratic process, which may come as a shock to some people occurring in a Federal bureaucracy, I would like to have a show of hands on either of these two alternatives, because I consider you people as part of this hearing. Also, you see, you are here, and I don't think those who are here want to just go away and not be heard. That is an alternative, of course, but I hope that isn't the way they feel.

I would like to opt for, say, having two witnesses and then recessing for about an hour and coming back. I would propose to run to quarter to 6:00, and then come back at, say, 7:00 o'clock.

Or we can run straight through, which means we will break up around 7:00 o'clock, the way we have been going.

If we go straight through it is going to be around 8:00 o'clock. Now, you see, I am being very democratic. I am not asking the panel, because they are getting paid.

From the Floor: Mr. Chairman, some of us may be in a position, where, due to other responsibilities, we may have to leave, regardless of what the decision is.

Dr. **Meyer**: Yes.

Floor: Can you consider some decision that needs to be taken based on that?

Dr. **Meyer**: I am well aware of the fact that there are some people who, for personal reasons, may have to leave early, or leave before a certain time. Could I have the hands of those witnesses who are involved in that? And please play fair with me, now.

(Two hands raised.)

Dr. **Meyer**: We have two gentlemen that in that situation. Would you identify yourselves?

Mr. **Sutter**: John Sutter.

Mr. **Bob Smith**: And Bob Smith.

From the Floor: Mr. Chairman, may I ask a question in relation to your two alternatives?

Dr. **Meyer**: I have a third one I am getting ready to propound, but I will be happy to hear from you.

Floor: When you say work right straight through and you will probably wind up at 8:00 o'clock, are you sure that everybody here who wants to be heard would be heard by 8:00 o'clock? I have a feeling it would get much toward the hour of 12:00.

Dr. **Meyer**: That didn't happen last night. We had about this same number, and we left here around 8:15 or 8:30 last night, and we had the same number of people at this time. That is why I am slowing down at this point.

Floor: That alternative, does it include everybody here being heard?

Dr. **Meyer**: That includes those who have been scheduled, whom I have here, who have indicated that they have something to say, yes.

Now, let me give you another alternative which occurs to me, which one of my staff members has given to me, and that is, I have no objection to starting off early in the morning, and if some of the people that are scheduled—We are trying to follow a logic sequence here. We have heard from governmental types this afternoon, mainly, and most of the people that are here are representing manufacturers or associations or groups that we would like to hear the other side of the story from. They are affected interests, as well as the citizens. Now, I am perfectly willing, if there are some of those people who are not trying to catch a late airplane, to convene this session at 8:00 o'clock tomorrow morning and pick up two or three people that way. So that is a possibility of doing it that way.

In other words, we could say, if there are some people right now who will say "Fine, we will be happy to come in at 8:00 o'clock," I am willing to schedule two witnesses for 8:00 o'clock in the morning. Panel, you don't object to a little earlier hour? Of course you object. I can tell by looking at you.

From the Floor: I would be willing to volunteer to come in at 8:00 o'clock, if there's going to be anybody else here.

Dr. Meyer: As I have told other people, this is the real audience right here. This is the audience. This panel is the audience. You all are participants, but these are the people who are really listening.

Mr. Randall Hurlburt: If I could have a private audience, that would do.

Dr. Meyer: Well, Randy, I appreciate that.

From the Floor: Mr. Young and Mr. Howe would be willing to take the morning spot.

Dr. Meyer: Let me write that down.

Floor: If we could be on the first thing, we would be willing to take the morning spot.

Mr. Hoag: Mr. Chairman, Mr. Hoag, of the Automotive Parts and Accessories Association, tomorrow morning. Is that okay?

Dr. Meyer: All right. That gives me three for the morning, and that is all I can take care of.

Now, let me see, I have still got the motorcycles—All right. We obviously have a time constraint. I would propose to do the following. If we recess, this hearing is going to go much later than it would if we take, say, a five-minute break right now and continue straight ahead. We then will get out at a reasonable time. So, having that alternative of getting some people in, I will proceed and take a five-minute respite here and go ahead and we will get through as quickly as we can.

(Short recess.)

Dr. Meyer: I do want to express appreciation to this group of participants in this hearing. Realizing that we do like to hear what people have to say, if anybody wants to summarize their prepared statement—and the reason I haven't insisted on summaries is because I like to let people talk. If anybody thinks it is late and they want to summarize, they may, and this is by no means an encouragement on my part. We are going to read everything. I might even add that I have just gotten through going over the draft of the first part of our report to Congress, and along with some of the rest of my staff we have read every single word in this some four thousand pages of material. So we are used to trying to digest this material.

At this point, then for the evening session we will go right on through, and I hope to be able to make it, as I said, at a reasonable time.

I would like to ask Mr. Robert Smith to come forth, sir, and we are pleased to hear from you, sir.

STATEMENT OF ROBERT SMITH, STATE OF CALIFORNIA

Mr. Smith: Thank you, Doctor.

I would like to preface my remarks by simply indicating that I am a resident of the City of Ontario. My name is Bob Smith, and I serve in various volunteer capacities and responsibilities in the City of Ontario. I am not credentialed or certified or doctorated in any way. I do not speak in any terms or in any manner as an expert. I simply have a viewpoint, and I would like to share that with you, based upon the accumulation of approximately 12 to 15 years' worth of information and background, between myself and some friends.

Assuring environmental protection in the current flow of the old into the new is related to the present American society which sees itself as in the midst of a struggle for survival. In such a situation, all human energy is harnessed for this struggle. When people realize that environment is a human invention, then we will be able to guarantee our citizens a meaningful subsistence as part of our heritage.

Although technological advances bring the possibility of providing for the needs of all people, two-thirds of the world's population are neither adequately fed, clothed, housed nor have adequate medical attention. Protection of property, life and environment are a guarantee for all. Millions of people die from starvation each year, having had no opportunity to discover their own being in full humanness. The society climate is unstable resulting in anxiety, suspicion, cynicism and anarchy. The industrial revolution accelerates the irresponsible use of resources which has left us an accumulation of the refuse of progress. These mushrooming complexities in the whole of environmental protection bring sharply to the attention of the public that our system is a closed one. There is no unified response for dealing with these incredible complexities.

The contradiction is that no body of people has decided to stand and create the models or plans that would allow people to take responsibility for people. This blockage is complicated by the fact that technology reveals it is possible to provide for the needs of all which leaves only the radical decision to be made of assuming responsibility. This responsibility means paying a high price: it would mean a commitment by all of us to those plans or models that would change the life style of the American. The response to this is either to become romantic about the ease of solving the problem or to ignore the magnitude of the problem and one's own responsibility for it.

What then is the present reality? The existing structures are fragmented and only exercise partial responsibility. Governmental organizations are out of date and unresponsive as well as being exclusive in their operations rather than inclusive. Private organizations and semi-public agencies function based on obsolete categories of needs and are intended to favor certain groups at the expense of others. In the last analysis none of these are dynamic.

Secondly, every person is unconsciously lucid about the fact that there is a need for environmental protection. Yet educational systems that are effective with all the wisdom of the grass roots are underemphasized. We need to find out all we can about environmental protection, become conscious of it and know the cruciality that without knowledge life becomes more complex.

Thirdly, people are brainwashed by today's symbols which give us a reduced image of environmental protection. New symbols should be created which will give a comprehensive vision of the future and encourage people to pay the price which is demanded for creating a new future and life style.

Fourthly, people refuse to impose plans of action or models on their environment. Concentration on individual circumstances rather than purposely directing one's local and national environment is only yielding to a fear of the future. People do not readily accept the fact that they must contribute themselves to mold the future. We are, therefore, always dealing with the immediate and never get to the problem behind the problem.

This Environmental Protection Agency should encourage local communities to build comprehensive, long-range models for developing and sustaining a secure existence through a protected environment in order to provide a well defined minimum standard of living for all people. Specifically, for the Ontario (West Valley) region, this would mean the creation of a tri-county agency to plan and effectively utilize the existing and potential resources of the area. Key to the noise component of this limited, horizontal organizational model would be the authority and responsibility to:

a. Determine regional land use policy and/or administer state land use policy;

b. Determine and administer the noise encroachment zones around the Ontario International Airport, a satellite airport of the Los Angeles Airport System, and

c. Ratain or close any one of the twenty-eight other airports within a twenty-five mile radius of the city of Ontario whose operations and flight patterns directly affect the residents of the region.

The motivational reimaging of existing structures to reeducate and redirect current political structures, in order to lift up hamanness rather than economic feasibility, should be done in order to restore the balance. To this end, this Agency should set noise criteria, establish noise standards, publish model ordinances, communicate effectively and singularily environmental knowledge and establish environmental protection bureaus at the grass roots, linked by a communication network, to assure accountability of governments to the people for the programs which they have fully participated in developing. Such bureaus would also assure the accountability of the individual on the street and down the block to the minimal subsistence level established by us all.

This Agency should also move in the direction of creating a national mindset on environment in which humanness exists. This would be achieved when we all realize our interdependence on others and on the environment. The education of educators to teach an environmental curricula should be a high priority along with creative educational techniques and educational research. All existing educational facilities should be involved to enhance their own efforts and to establish a national and world-wide network of environmental education. Research and library facilities should also be linked to this educational alliance.

Through the educational process, conversation, art forms, literature, publications, the language itself, architecture and citizen involvement in community planning, the new symbols would be created which would give people a way to creatively participate in order to bring about a concern for and a newer order of environmental protection.

Through grass roots workshops and decision-making structures, people would develop and live out the commitment that all the earth belongs to all the people.

We can expect some reactions to these ideas. The argument will be made that the validity of all this will rest on its economic feasibility since these ideas are not presently considered political questions. This is false. If people are expected to participate in the decision making, we must have access to all available information and the gestalted legal abstracts of continuously updated laws and regulations. At first look the price for maintaining a people defined minimal living standard appears high: it entails the shattering of many economic myths, preventing unbridled land speculation, major corrections in economic distribution systems, and a change in individual and national life style. This is a small sacrifice if people are to be in command of their own future. The rationale for these ideas comes from the cultural aspect of our society. People should have the opportunity to act out their cultural values within a framework of a socially responsible environment of their making.

In support of these comments, I am forwarding the following exhibits for your review:

Exhibit No. 1—An excerpt of a Claremont Colleges doctoral thesis by J. Frederic Blitstein which comments fairly accurately on the political environment of the city of Ontario. It shows rather clearly that the city of Ontario is moving from a conservative citrus hierarchy into a post-industrial and technological age, and that much of the thinking of that citrus belt or citrus philosophy is still with the city. It shows that there is definitely a need for a balancing of economics with human needs, that there is friendship politics, and that the only positive value to the people of the city at the present time is in the economic interests, and that people are being hit over the head because of the economic interests that exist in the area.

Exhibit No. 2—

(a) Copies of letters forwarded to and replies received from the city of Los Angeles in response to citizen action;

(b) Copies of letters forwarded to and replies received from the State of California in response to citizen action;

(c) Copies of letters forwarded to and replies received from the Congress of the United States in response to citizen action;

(d) Copies of letters forwarded to and replies received from the Federal Aviation Agency in response to citizen action; and

(e) A copy of a petition and report to the City Council, city of Ontario, in response to citizen action.

The point to remember, gentlemen, regarding these two exhibits is that they illustrate that up until now nobody has really cared, that it has been easier to simply pass the buck. In the final analysis the airport operator, the FAA and the airline industry are the true culprits in wasting the Ontario (West Valley) region in a fashion similar to the Los Angeles example. This Agency should develop a reward/punishment schematic for all concerned parties. Admittedly, safety is a legitimate reaction here. But as with the economic feasibility stance, if people are "turned off and tuned out" there won't be anybody to use the airports and pay the fares.

Exhibit No. 3—

(a) A copy of an "Airport Impact Study" undertaken as a joint venture by local, State and Federal agencies in conjunction with the San Bernardino County Planning Department;

(b) A copy of "Airport Environs: Land Use Control" by the United States Department of Housing and Urban Development;

(c) A copy of "Noise Exposure Forecast" by the United States Department of Transportation; and

(d) A copy of a "Planning Department Staff Report" to the City Council (Montclair).

These four items fully discuss the noise impact on the Ontario (West Valley) region. As an example, let me read the following. This is an excerpt from the West Valley Planning Agency Staff Report and Analysis of the Los Angeles Department of Airports Proposed Plan for Ontario International Airport, and it has to do with runway system and location.

The plan proposed will create an intolerable problem of noise and pollution over the central part of Ontario and extending into the Cities of Montclair and possibly affecting portions of Chino. The following is a tabulation of significant land uses which are to be found within the area which will receive the greatest impact of sound and air pollution.

115 CNR. 46 Dwelling Units; 1 church; Bon View Park.

110 CNR. Two Elementary Schools; two parks; eight churches. Major concentration of institutionalized people, mentally retarded foster care, 200-400 individuals. Approximately 1,550 dwelling units.

105 CNR. Five parks; one Junior High school; four Elementary schools; City Hall complex; American Legion building; fifteen churches; Ontario Central Business District. Approximately 3,550 dwelling units.

100 CNR. Two Junior High Schools; ten Elementary Schools; Hospital; School Administration Building; Kingsley Park; Drive-in theater; St. George's Catholic School and Church; Ontario City Library; Children's Home and School (handicapped). Approimately 6,000 dwelling units.

A tremendous burden would be placed upon the citizens and local governments to accept the losses in tax base created by noise and air pollution, let alone the great loss in living environment, over the very heartland of the urban area in the West Valley area. The value of residential dwelling units lost is estimated in exess of 100 million dollars with replacement cost probably in excess of 150 million. Ten public schools may have to be abandoned or soundproofed, if possible. This cost may exceed 10 to 20 million dollars.

Losses related to other public buildings, parks, churches, et cetera, are difficult to estimate, but it appears that a conservative estimate of the total dollar value lost to the citizens of the West End may approach 200 million dollars.

We have already begun to talk in terms of replacing or relocating, just within the 100 CNR to 115 CNR sound ranges, approximately 300, perhaps 400 million dollars just to make it people-safe.

The point to remember here is that local officialdom is aware of these facts. People tend to believe that their elected officials don't care, for they have not responded. They simply ignore the problem, gentlemen. They simply do not talk about the problem. We cannot even bring it about in our part of the world that there is an airport that generates noise by its operation, and that there are airlines flying overhead. Again, if this condition continues, "there ain't gonna be nobody" living in the Ontario (West Valley) region to benefit from the positive effects of an international airport. Unfortunately, people tend to believe that the economic balloon is inflated with the hot air of friendship politics and the conflicting interests of land promotion schemes. In short, the people have been raped by the region's economic interests.

Exhibit No. 4—A copy of the proceedings of a public hearing held at Westchester High School in Los Angeles City on October 8, 1970.

We in the Ontario (West Valley) region are about to receive the results of a required Environmental Impact Study. If our public hearings follow the same pattern as is illustrated here, the entire effort will be a waste of time for both the government and the people who attend. Evasive, vague and non-meaningful answers are what some people now expect. This attitude is a result of the failure of government to fully involve people in the mainstream of government operations and concerns.

Thank you.

Dr. **MEYER**: Thank you very much.

Sheldon?

Mr. **PLAGER**: Out of deference to the bottoms of the audience as well as the panel, I have no questions.

Mr. **HILDEBRAND**: I have no questions.

Mr. **BARON**: No questions.

Dr. **MEYER**: Thank you very much.

We appreciate very much getting those figures, particularly, Mr. Smith, of the extent of the problem, which will be very useful not only in finding out about your attitude and that of your group, but also in learning of the magnitude of the impact.

It is very useful. Now I would like to ask Mr. John Sutter.

STATEMENT OF JOHN SUTTER, STATE OF CALIFORNIA

Mr. **SUTTER**: Good evening.

Dr. **MEYER**: Good evening. Thank you for staying.

Mr. **SUTTER**: Thank you calling me out of order.

My name is John Sutter. I also am not an expert. I am an attorney, not an acoustical engineer. I come to you with several hats on. One is as chairman of an organization called the Bay Anti-Noise Group, which is one of the groups listed on your Environmental Protection Agency Region Nine Noise Pollution Newsletter. The acronym is BANG.

Dr. **MEYER**: For a noise control agency?

Mr. **SUTTER**: No, no, it is a citizens' group.

Dr. **MEYER**: I mean for a citizens' group. Great.

Mr. **Sutter**: I also happen to be recently elected to the Oakland City Council. Oakland is a city of about 360 thousand across the bay from San Francisco.

In addition to that I chaired an organization called the Committee Against Trucks on MacArthur Freeway. We fought with the State Division of Highways and the Bureau of Public Roads for some five years, and finally persuaded them to ban truck traffic from the MacArthur Freeway, which goes through the city of Oakland, and that is the only occasion on which that has occurred on an interstate freeway in the State of California. That was done largely because of complaints and problems with respect to noise.

To live today in any city in America is to be continuously assailed by the screeching, roaring, clattering, and the banging of man-made noise. I am sure that is a point many other people have made. In some instances these unreasonably loud noises are the result of poor design and a don't-give-a-damn attitude. I am convinced—and this is an opinion which is not based on statistical data, but just being a person listening to devices over the years—that the manufacturers of certain items, particularly motorcycles, work deliberately to give the buyer more bang for his buck.

There is something about a motorcycle which I think is a sex symbol and the kids think that the noiser it is the better it is, and the more impressive it is to his friends and his girl friends.

Certainly the brutal assault on our ears must be stopped, and it is certainly a contributing factor in the flight from the cities to the relative quiet of the suburbs. That is a problem our city and others have had. And almost as certainly it adversely affects our ability to think and work and communicate.

As a member of city's council I hear complaints from citizens outraged by whining chainsaws, from screaming sportscars, or our most flagrant violator of the peace, the Navy's jet engine testing station at the Alameda Naval Air Station. As a matter of fact that single activity produces more complaints in Oakland and other communities than any other, and I would hope your committee directs its attention to the problem of the Federal Government as a noise polluter, which it often is.

But the question is, what can we do at a local level about the noise pollution? Not nearly enough. Our problem is, we get complaints because we are the people who are closest to those who have to suffer with the complaint, so we get the phone calls of the people who are concerned, and I have been impressed by the wide variety of noise makers that people complain about: air compressors on construction equipment; air conditioning equipment; the cooling equipment on trucks. Just the other day a lady called who lives across the street from the super market. At 5:00 o'clock in the morning the trucks stop across the street from her house to unload, and he has this equipment on it, which is noisy.

In Oakland we are now considering a noise control ordinance, and that is a model ordinance which was prepared by the California League of Cities. But our city attorney has told us there is little city of Oakland can do about noise made by trucks, buses, helicopters, motorcycles and certain other devices. He tells us specifically that State law has already preempted our control of noise on motor vehicles, and that Federal law has preempted our control over noise which has been created by aircraft, including helicopters. So maybe we can, despite what the written material says, maybe we can regulate chainsaws and a few other things, but certainly some of the big sources of noise pollution are beyond our jurisdiction.

So this is really a Federal problem, and the Federal Government must take prompt, meaningful and effective action to bring about a solution. I have several specific suggestions. I don't know if others have made them. I assume that some of them have been made by others.

First, a Federal noise control agency must impose standards on manufacturers and importers of the wide variety of machinery and equipment. Deadlines must be established after which they will not sell machines—and I might add import machines—which exceed given decibel levels. The protest from affected industries will be long and loud and anguished, and I guess you are hearing them. But until some demands are made, few if any manufacturers will concern themselves with noise suppression, and the auto safety experience tells us this is true.

I would suspect it would be very interesting to get the figures on research which is done, the amount of money devoted to research for noise suppression on a variety of different manufactured goods. It would be especially interesting to get that information from some of the recent imports, and it would be interesting to know how much money is spent on research on noise suppression of motorcycles, for example, in Japan. I would venture to say it is about one one-hundredth of one percent, or a lot less.

Dr. **Meyer**: Councilman Sutter, I hope you will stay here. The next witness may be able to answer your question. He represents the motorcycle industry, and I am just delighted that fortuitously your testimony and his will make a very interesting follow-through in the hearing.

Mr. **Sutter**: Motorcycles are a tremendous source of complaints, not only in their original state but in their modified state. They are a tremendous source of complaints in Oakland partly because of the geography. We have hill areas where noise rebound. We happen to be the home of the Hell's Angeles, and they have lots of motorcycles. It is a continuing problem. There are also people who like to go out into the hills and run up and down the hills in residential areas with motorcycles, which they do everywhere, which not only wrecks the countryside but it bombards the ears.

The second suggestion I would have would be that the Agency should have a staff qualified to advise other governmental agencies, such as Alameda Naval Air Station, on noise problems, as giving advice to the private sector, on means of reducing overall noise level in their activities. Where appropriate they should comment publicly and critically on the performance of other agencies or on private industry.

Now, again, let's use our Navy as an example. I don't want to give the impression they haven't done anything, because they have done something. What they do is test jet engines. This is a facility where they repair jet engines. There is a real question in our minds whether it even has to be located in the middle of a metropolitan area. They have put in some baffles. They have cut down the hours of operation. It is still a tremendously noisy activity.

But if another Federal agency were to blow the whistle and say "Look, you guys can change around your operation. You can do a, b, c, and d." That public pressure would be sufficient to prod the Navy into doing more.

Finally, other communities must be encouraged to adopt ordinances, as we expect, or at least I hope, the city of Oakland will do, in order to prevent, for example, modifications of equipment, removal of noise suppression devices, and so on.

Of course, I do get back to the main point I wanted to make, and that is that we are relatively helpless at the local level. When we are dealing really with what is a design problem, the problem is not solved at the point of manufacture, to try to enforce at the local level becomes next to impossible, and I might say our experience with motorcycles is very disheartening. The State passed legislation which did impose certain decibel levels, but in fact the decibel levels imposed are pretty much what the industry dictated. They are the decibel levels of the motorcycles as now manufactured, which merely means that the only thing that is enforceable is the person who modifies the equipment that is sold today. That doesn't get at all to the problem of whether or not it is properly designed in the first place.

Secondly, you have the enforcement problem any way, that the police and other law enforcement agencies feel they have got more important things to do than go around with some sort of equipment of measure the decibel ratings.

So for all of those things it just seems to me that you have to have some kind of meaningful regulation at the Federal level, and you must regulate imports. I haven't heard much discussion here, I haven't been here very long but I haven't heard much discussion about importations from other countries, but certainly we are increasingly getting noise makers which are imported.

Dr. MEYER: Councilman Sutter, thank you very much for bringing another city level viewpoint on this. Before making a couple of comments and answering your last question I will ask the panel if they have any comments or questions. Mr. Martin?

Mr. MARTIN: Councilman Sutter, let me ask you a question. Has the City Council in any way decided to buy quiet buses which are available?

Mr. SUTTER: In our city we do not run a transportation system. We have a district, which comprises a much larger area, which is running a public transportation system. I will say this for their buses. They are quieter than the ones San Francisco recently purchased.

I don't have enough information to give you a really intelligent answer.

Mr. MARTIN: The other thing which concerns me, you are talking for Oakland. The State of California wants to pass it on to the Federal Government. Doesn't the City of Oakland have any influence with the people in Sacramento when these laws are passed, as far as what levels of things should be set in the State ordinances?

Mr. **Sutter**: Oh, sure. I think that we have some influence with our State legislators, and I think that those who represent our district, as a matter of fact, are generally sympathetic to a wide variety of environmental problems, including this problem, and that at least the motorcycle legislation is a first step which has been taken.

But I think the State legislature also feels the same constraints that I refer to, and that is that you are dealing with a problem of trying to regulate at the place of use, whereas really the place of regulation more logically should be at the point of manufacture. And I would say in fairness to the manufacturer that is the case.

Mr. **Dietrich**: With respect to your last statement, you put in almost either-or, don't you? That is you believe it is either use regulation or manufacturer regulation. Don't you believe that the two together could be more powerful that either alone?

Mr. **Sutter**: Oh, sure. I will buy that.

Mr. **Dietrich**: Also, in follow-up of the previous question about buses, presumably the City of Oakland has some representative role within the larger area that buys those buses. Or, let's say, refuse collection trucks is another example of municipal vehicles.

I appreciate your comments about the lack of enforcement of noise regulations against motorcycles in use, but I wonder whether the city has considered using other than police, other than the city police, who presumably may have reasons quite properly to believe that this is low priority. Use some other agency, or create one, to control motorcycles in use, particularly, the problem alluded to of the modified motorcycles, which can't be controlled by whatever you tell the manufacturer.

Mr. **Sutter**: Who would you use?

Mr. **Dietrich**: Well, I think I put the question to you, but I will be glad to suggest that I know a city in the State of Colorado that essentially picked upon the citizen who was interested in doing that and who then became a city employee for that purpose, enforcing noise regulations for vehicles in use.

Mr. **Sutter**: Well, we have thousands of miles of city streets, and I don't think it would be feasible, really, at least in a city of our size, for any agency other than the police department to carry on this function. I just can't imagine a volunteer brigade of—

Mr. **Dietrich**: No, I didn't mean to suggest it was volunteer. I tried to make it clear these were city employees, but his duty is, just as you might have a health inspector concerned with restaurants, this man is concerned with the acoustic environment of the city, particularly motor vehicles.

Mr. **Sutter**: Another problem is that this is an around-the-clock activity, and the police are one of the few agencies which operate around the clock. As a matter of fact it is often worse at night.

I happen to live near this freeway that I referred to, and on Saturday nights when it is warm it is just unbearable, because the kids think that the freeway is a drag strip, and they are running up and down with their motorcycles and sportscars and other devices. In the hills it may be Sunday morning when people are disturbed by the motorcycles climbing up and down the hill area.

Mr. **DIETRICH**: I am concerned that you don't feel you can internalize the enforcement of this. I am not at all sure I understand in what way you think the Federal Government, what it might do with respect to the manufacture of these vehicles, can help you with the way are used and, let's say, modify their use?

Mr. **SUTTER**: Oh, I agree with you there. As far as modification and as far as use, say in the wrong place, where a certain type of traffic is not permitted, obviously it has to be a local enforcement problem, whether it is the police or some other agency.

Dr. **MEYER**: Dr. Dietrich, if you would yield, I would admit to the point that, assuming that the laws are enacted which both the Executive Branch and the Legislative Branch have proposed, there seems to be bipartisan support for the idea that modification or alteration of a device or equipment meeting the standards becomes an offense with rather severe fines. With an enforcement arrangement at the State level whereby the states received half the fines, you would hope then that you would have a deterrent effect on the people who would do this.

Also, we haven't mentioned this much before, but there are proposals in the Congress which provide for citizen suits, both against an agency which fails to exercise its responsibilities as required by the law, and against an individual violator. The citizen then would be allowed to obtain an injunction and file a suit under Federal law against the person who altered his motorcycle. This would certainly begin to serve, we think, as a very realistic deterrent to people committing these acts which are inconsiderate of their fellowman.

Mr. **SUTTER**: I think that would be more effective against large industrial noise makers, for example, and I would suggest, if you are contemplating recommending something along those lines, that there must be a provision for attorneys' fees.

Dr. **MEYER**: We understand the problem in connection with citizen suits.

Mr. **DIETRICH**: I guess the only thing that comes to mind is that if I were a resident of the city of Oakland, perhaps I might be a little reluctant to bring a suit against the Hell's Angels. I think we have heard testimony about this reluctance to act before.

Dr. **MEYER**: Mr. Baron?

Mr. **BARON**: As we hear from other parts of the country, the climate for noise abatement as a real issue—not the issue but the necessary beginning of noise abatement action—starts to shape up, because right now the noise source is at the top, and in many of our attitudes we have come to defend the noise source. We have not developed an attack yet—that is why these hearings—on how to control the noise source.

I appreciate the fact that you added a suggested yardstick. For example, the dollars spent on noise suppression research is an interesting yardstick. This is one of the things that evolved, how do we determine what society is doing as far as this problem is concerned.

The examination of imports, though, we may find to our amazement that we may be exporting rather noisy vehicles that are not meeting European standards, so your suggestion may possibly be taken in reverse as a means of achieving noise abatement.

Finally, this point that was raised by one of my colleagues, and that is the use of purchase specs by the city. You can get now quieter garbage trucks. You can get quieter air compressors, quieter jack hammers. Quite an array of equipment is trying to come on the market now that cities could buy if it would include this specification. It is a good technique. It means that you don't have to wait for either local legislation, which you indicated might be hampered, or wait for the wheels of the Federal Government to come around full circle to where it can help your particular community. Purchase specs should be examined very carefully by every municipality.

Mr. **SUTTER**: That is an interesting idea. Maybe your agency could provide information to cities on that.

In addition to that, you see, there is a step beyond that. It is not only purchase by the city, but imposing conditions on contractors. Many cities do not do very much work themselves, as far as construction work. Most of it is bid out on private contract.

Mr. **BARON**: This is a very good point, and this is something we are trying to do in a pilot project in New York City. But everything should be explored. I am not saying pro-preemption, pro-this or pro-that. But I am saying the cities could develop a number of techniques that would give quite a bit of help in certain areas.

Mr. **HILDEBRAND**: Mr. Sutter, you stated that your city attorney told you there was little you could do about noises from trucks, buses, et cetera, because this area had been preempted by the Federal Government?

Mr. **SUTTER**: No. In the case of motor vehicles, it is preempted by the State. At least in the case of motorcycles. My statement actually is too broad. The specific question was the regulation of motorcycle noise. He said that was preempted by the Vehicle Code enacted by the State legislature.

With respect to helicopter noise he said that was preempted by the Federal Aviation Agency regulations and by congressional legislation.

Mr. **HILDEBRAND**: I see. I would like to stress again that this is a multi-disciplinary area, and perhaps the next time you speak with him you should include technical people. There clearly are ways to control noise which have not been preempted by any of those things. To mention a few—well, we have mentioned a few already, but a few others are speed regulations, limited-access routes, curfew on certain activities, and you might also be able to outlaw certain vehicles, or perhaps all vehicles from these cities.

Mr. **SUTTER**: That would be an interesting idea. We would have a hard time selling that to the Bureau of Public Roads.

Dr. **MEYER**: Dr. Plager?

Mr. **PLAGER**: Councilman Sutter, would it be fair to say from your testimony that the real problem from the viewpoint of the citizen, and yourself as a Councilman, isn't the fine technicalities of preemption and jurisdiction and all the rest of that, but the real problem is one of finding the appropriate level of government best able to address a particular kind of problem, or some aspect of that problem in the most efficient and effective way? Is that a fair statement?

Mr. **SUTTER**: Right.

Mr. **PLAGER**: Then that is really what we ought to be focusing in on, is what level of government can best deal with a particular aspect of the total noise problem.

Mr. **SUTTER**: That's right. You will have to leave barking dogs to us, I am afraid.

Dr. **MEYER**: I wouldn't want to see us try to enact a Federal law on that.

Mr. **PLAGER**: That might be more difficult than any other noise problem.

Mr. **SUTTER**: It is.

Dr. **MEYER**: I don't know. When we were in Atlanta, as Mr. Baron will recollect, we had a gentleman representing the Citizens' League of Old People, and without getting into a controversial position, because I am just quoting what he said, he said his biggest noise problem was listening to all those old ladies talk. I don't think we would want to legislate that, either.

Councilman Sutter, I appreciate your coming, because it has been very useful to us.

I would like to answer a couple of your points, if I might. First, with regard to the Navy jet engine testing at Alameda, just as in the case of some other complaints, I shall indeed take due notice of that by forwarding a little memorandum over to the Assistant Secretary of Defense regarding that.

You might be interested, as well as those who are participating with us, in knowing that our agency does have the responsibility, under existing law, of being consulted by the other Federal departments and agencies about noises that we deem to be a nuisance or otherwise objectionable. We are in the throes of making what amounts to an inventory of Federal noise activity, to determine exactly where the problems are, with a view of making recommendations and advice for their correction. So we indeed are deeply involved in this, and hope to act as an intermediary between other governmental agencies, such as a city or State, in dealing with the Federal activities who may be offending their noise standards.

Mr. **SUTTER**: Is that public?

Dr. **MEYER**: Yes, sir. That is Section 402(c).

Mr. **SUTTER**: In other words, if you have a comment to make, that becomes public information?

Dr. **MEYER**: Yes, sir.

Now, with regard to the question of dollars for research, we are preparing, as you probably know, a very comprehensive report to the Congress. This subject of research will be included, and we would think that the public, as this becomes available after the first of the year, will have this sort of information. We are developing this. I thought you might like to know that we are developing information as to what the Federal government is spending, what the States are spending, and to the extent possible, what industry is spending.

Transcripts of the hearings that we have been conducting, such as this, are including, wherever it has been given, the information relating to the industrial research effort. I thought, since you raised the issue, I might as well answer the question for you.

Lastly, with regard to imports, we are well aware of this problem. As my colleague, Mr. Baron, points out, many countries have more rigid laws on noise than we do. Conceivably some of the products they are sending us are manufactured not in accordance with their own standards, and as a result of the fact that we don't have standards. We are recognizing this in pending legislation which in effect. This is a very complex thing, and may even involve treaties.

Import of materials, vehicles, equipment, will have to meet the same standards as imposed in the United States, if our law goes through.

We appreciate your coming, sir. It has been a very, very useful exchange of information.

Mr. **Sutter**: Thank you.

Dr. **Meyer**: I should now, as I indicated, like to have the panel and those participating with us in this hearing hear from the motorcycle industry as to how they see this problem. I am sure it will be educational to all concerned. I am aware of the fact that the industry is trying hard to do a lot of things. It is nice to see you, Mr. Lucia, and we look forward to hearing from you.

STATEMENT OF RAYMOND W. LUCIA

Mr. **Lucia**: Dr. Meyer and members of the Committee, my name is Raymond W. Lucia, Director of Legislative Activities of the Motorcycle Industry Council, Inc., a trade association whose membership includes the principal importers and manufacturers of two-wheeled motor vehicles marketed in the United States. In addition to vehicle manufacturers and distributors, allied companies such as producers of helmets, batteries, tires, specialized parts, chain and consumer magazines are members of the Council. The trade association has, as associate members, some 1200 motorcycle dealers throughout the United States. To the best of my knowledge the M.I.C. is the only organization which represents the motorcycle industry on a national basis.

Our industry has long recognized the noise generated by motorcycles is often an undue annoyance to the general public. We also recognize that it is essential to the survival of our industry to produce more quiet machines. If we as an industry do not take appropriate steps in this direction, public disfavor may reach such proportions that the future manufacture and sale of motorcycles may be restrained. As evidence of the long standing concern of this Council with legislation of this type, a resolution adopted over a year ago set noise level limits for motorcycles. Manufacturers and distributors within our industry have agreed to produce their machines not to exceed those levels. The levels varied by size of engine displacement from 86 dB(A) to become effective January 1, 1973. It should be noted that the levels established above were near maximum noise emissions from the machine and were to be used as those levels for manufacture and sale, not operational noise levels normally encountered. The noise levels advocated were considered technically possible when used in conjunction with the specified instrumentation and test procedures.

The M.I.C. suported the Senate and House bills now under consideration, namely the Noise Control Act of 1971. We strongly supported the section which concerns itself with Federal preemption. This would preclude states from adopting or enforcing noise generation standards other than those prescribed by the administrator, but does not preclude any state from otherwise controlling, regulating, or restricting the use, operation, or movement of a product. Our belief is predicated on the fact that a multiplicity of regulations would result from any other approach. To illustrate this it is observed that within the year of 1971 there have been over 100 noise bills introduced in some 33 states. The noise levels and testing procedures proposed in these bills vary from locality to locality and from author to author. Some would require state boards to set noise levels, others would have state boards study noise abatement problems, and still others would actually establish noise standards for motor vehicles as a matter of law.

Some characteristics peculiar to motorcycles make them a difficult subject for noise suppression. The engines are generally air cooled and air cooled engines often emit more noise than their liquid cooled counterparts. The engines are not shielded so that their noise is not contained. The length and diameter of the exhaust system is limited so that complete noise suppression is not easily achieved. In spite of these technical problems, much progress has been made in recent years in reducing motorcycle noise. More progress can be expected from the industry.

Motorcycles represent less than three percent of highway vehicles and even this small percentage reflects enormous growth in the last few years. As a natural result there is less appreciation for the industry products and their users. The tendency has been to think in terms of motor vehicles in more common use and in their capabilities and characteristics. The studies, the statistics gathered, the programs generated have principally directed at other types of motor vehicles; consequently, there is a greater depth of expertise which relates to those vehicles. Further, noise abatement programs are in their infancy and we are all gathering and will gather more knowledge as time goes on and as the results of programs and tests become available. The newness of the program and the understandable lack of technical knowledge is perhaps a reason why we find so many bills in the states with different levels, different testing procedures and different approaches to the problem. As you can well see, without centralized control of some type, our small industry may be unable to cope with the mass of regulations which may result.

The test procedure for measuring the noise levels mentioned above, was the method used by the California Highway Patrol. A standardized testing procedure is essential for all enforcement agencies for, from a manufacturers/distributors point of view, varying test procedures would produce varying results; consequently, from a marketing point of view, an impossibility.

During the month of September of this year, our industry tested a new procedure which is a weighted type, in other words, would test motorcycle noise at four different modes: 1. Maximum noise; 2. 60 mph—passby; 3. 40 mph—passby; and 4. Idle.

Since one of the purposes of noise abatement concerns itself with the health of individuals, then perhaps the method used should test noises that the individual would normally hear. It is our plan to present this new testing procedure to the Environmental Protection Agency and other agencies throughout the country for their examination.

Dr. **MEYER**: We would be most pleased to get that just as soon as we can.

Mr. **LUCIA**: Yes, sir.

Dr. **MEYER**: And we will include it as part of the record, so it will go to Congress as well.

Mr. **LUCIA**: I now plan to address the question of modification. Some motorcycle owners, after purchase of a motorcycle, modify and remove the baffle plates or add expansion chambers for the purpose of creating noise, or as they believe, to increase the horsepower of their machine. This creates undue annoyance and public disfavor. We believe one solution to the problem is driver education and enforcement.

In November of 1970, the Motorcycle Industry Council prepared and distributed to all Motor Vehicle Administrators a Motorcycle Inspection Procedure to be used for annual or semi-annual inspections, as the case may be. We recommended rejection of the motorcycle if, among other things: one, exessive noise existed; two, baffles were removed from the muffler; three, muffler had been modified; four, a portion of the muffler had been cut off; five, any type of cutout or bypass of the standard muffler; and six, when there is an applicable State or Federal standard, the original or replacement exhaust system must meet the standard. Where there is no standard, the replacement exhaust equipment must be the reasonable equivalent of the original exhaust system.

In May of 1971, the Motorcycle Industry Council undertook a campaign of driver education as it applies to noise. Eight thousand kits were mailed to all motorcycle dealers throughout the United States. These kits contained posters, buttons, window stickers, and resolutions which centered around the theme "Less Sound—More Ground" and "Join the Noise Pollution Evolution." It was our intention to educate the motorcyclist that noise was an enemy of motorcyclist. We have produced tapes to be played over radio stations all through the country advocating this theme. We hope through this educational process that motorcyclists will cease modifying their machines and operate their machines in a sensible fashion. Inspection and driver education is where we can make some definite inroads toward noise reduction. This, coupled with industry effort and redesign, can go a long way towards solving motorcycle noise problems.

We will continue to work with the Environmental Protection Agency in any fashion that will be helpful.

Thank you.

Dr. **MEYER**: Thank you very much for a very lucid statement of what you all are trying to do.

I will start on my left. Mr. Martin?

Mr. **MARTIN**: No questions.

Dr. MEYER: Dr. Dietrich?

Mr. DIETRICH: I am intrigued by the Motorcycle Industry Council's resolution with respect to maximum noise limits for new motorcycles, in that it breaks down the limit by displacement class of motorcycle. Could I have your comments as to whether that reflects what the motorcycles presently do, or could do in the near future, or whether that reflects some consideration of the way different sizes of motorcycles are used, and the propensity for the population to be exposed to these.

Mr. LUCIA: You must understand first that I am not an engineer, so I am going to talk from my knowledge of listening to our engineers.

Dr. MEYER: Understood, sir.

Mr. LUCIA: The levels we have set for July of '73, we cannot meet those limits at the present time.

Mr. DIETRICH: You mean existing vehicles do not meet those levels?

Mr. LUCIA: That's right, at this time, no.

Mr. DIETRICH: Do some of them?

Mr. LUCIA: Some of them do, yes.

Mr. DIETRICH: Some don't and some do. Do you have some feeling as to how that might be split? Is it fifty-fifty, or few meet it, or few don't meet it?

Mr. LUCIA: Well, I would say, depending on the cc of the engine, and I am talking 125 cc up to 1200 cc, and I am not including the very small ones, we can meet that now. As a matter of fact they go much less. Academically I can give you a figure of one machine that is 81 dB(A) that is 100 cc, and there are 90 cc machines that are at 78 at the present time, right as of now. But there are other machines, such as the—well, the Harley-Davidson, if I can use the name, at the present time is below the 86 level, but there are other machines that are not below that level. But they range somewhere between 91 and 84 at the present time. This is the 1970 vehicle I am speaking of.

Mr. DIETRICH: So what you are saying, as I understand from the bulk of your answer is this really has to do with what the vehicles can do now or might do in the very near future, and really isn't related to—That is, splitting it by displacement class is merely a relief for the vehicle and problems of the manufacture of the vehicle. It is not something in response to the way you think the vehicle is to be used and the way the public is exposed to their noise?

Mr. LUCIA: But normally the noise is closely related to the size of the engine.

Mr. DIETRICH: Well, that is just the point. That is, why should I get a license to make more noise pollution because I have the money to buy a bigger engine? That could be another way of putting my question.

Mr. LUCIA: I don't quite get that.

Dr. MEYER: Well, I think he is saying that the question is whether the level should be keyed to what the size of the engine is, or should it be keyed to stretching technology to come down to some level that really has no bearing on whether it is a big engine or a little engine.

Mr. LUCIA: I believe that eventually the technology should reduce the noise of all of them. There is no question of it. Our industry believes that.

Mr. DIETRICH: I wanted to make a comment in closing, and that is that I am very pleased with the Motorcycle Industry Council's efforts to stop this user modification of the motorcycles, and in the recent trip that I have taken to visit various motorcycle dealers I was pleased to see a great deal of agreement at the dealer level with this position. I find some exceptions, to be sure, but I am surprised, and pleasantly so, with the success of that campaign.

Mr. BARON: At what distance are the levels for 1973 measured?

Mr. LUCIA: Fifty feet.

Mr. BARON: So that in 1973 we would legalize the noise emissions which are—We are permitting 88 dB(A) in New York State for trucks, so you go two dB lower than that in 1973 for motorcycles.

What is the range of size in terms of displacement? That is a common way of describing motorcycles. Is that right?

Mr. LUCIA: It goes from 50 cc for the very small motor-driven cycle type all the way up to 1200 cc, which is the Harley-Davidson machine usually used by the police.

Mr. BARON: Do you have any idea how much research or what research is being conducted by your industry on noise suppression?

Mr. LUCIA: I can't give you a dollar figure, but I can tell you that I just recently returned from Japan on a tour of all of our four major companies, and each one of them are doing research on air and noise pollution.

Mr. BARON: We hear a strange legend, and maybe you can put it to rest, and that is that the Japanese motorcycle in Japan is very carefully regulated, but the export model is treated or the muffler is replaced or substituted or whatnot, so we are getting more noise in the Japanese models in the United States than the Japanese are getting.

Mr. LUCIA: I asked the question of some of the Japanese people when I was there, and I didn't get the impression that the Japanese motorcycles had standards such as we had.

Mr. BARON: Your impression is they are not any quieter.

Mr. LUCIA: Actually in their air pollution standards their standards become effective some time in '75 before they have teeth at all.

Mr. BARON: You say noise abatement programs are in their infancy. It is my understanding that back in 1966 it seems I was reading literature produced by the Swiss and the Germans and the Austrians and so on, and Sweden, which included motorcycles and referred back to an earlier period. So shall we interpret your statement that noise abatement is in its infancy as noise abatement in motorcycles in the United States is in its infancy?

Mr. LUCIA: Yes, right.

Mr. BARON: Do you believe the American manufacturer to be conducting more research in noise suppression?

Mr. LUCIA: There is only one American manufacturer, and that is Harley-Davidson, and I know I have talked to their engineers and they are doing research. As to what volume, I can't answer the question.

Mr. **Baron**: The weighted section you set up for testing your four modes, in a sense isn't the urban situation eliminated when you stop at 40? In other words, there is a speed between idle and 40 which would be the speed at which motorcycles would more likely be used in a city.

Mr. **Lucia**: We use the 40 basically for ease of testing. 35 would have been the ideal. We discussed 35 because a lot of the use laws in the states talk to under 35, over 35. But we used 40 just for ease of testing.

Mr. **Baron**: Shouldn't there have been something for city use?

Mr. **Lucia**: Well, yes, the 40 dB(A) count is very close to what would be used in city use, I think.

Mr. **Baron**: A lot of city noise limits are 35 and below that.

Mr. **Lucia**: 35 miles an hour, yes, I know that. Actually the noise level would be less at those speeds than they would be at 40.

Mr. **Baron**: At revving up, would you be close to maximum noise? In other words, from a stopping position would you be close to maximum noise? You know, if you jumped the gun, so to speak, after a stop light?

Mr. **Lucia**: Well, it would depend, I would think, on the user himself. But no one needs to go to maximum rpm from a standing still position.

Mr. **Baron**: Oh, we all understand nobody needs to. No, I don't buy that statement. Apparently there is a need to do that.

Dr. **Meyer**: It is not a need. It is a compelling desire.

Mr. **Baron**: There was an interesting comment by a professor at Harvard. Desire is the right word. You get a sexual connotation to noise of motorcycle operation.

Do you feel that these modes adequately cover—what I am concerned about is this, that these modes should not be so written that they do permit loopholes, as sometimes happens, unfortunately, so that a noisy increment gets by?

Mr. **Lucia**: Well, it takes into account maximum noise, 60-mile passby, 40-mile passby, and idle. We haven't fully developed the system. We are working on it. We plan to have it prepared sometime around 15 October of this year. We already believe we are going to throw the idle out as being of no value.

Mr. **Baron**: Well, I defer to the experts, but in giving this material to the panel I would suggest that some point be made about the application to urban areas.

I am glad to see your attitude and your action on the modification of the mufflers, because that is a big problem.

When you say "excessive noise" are you referring to the 1973 standards?

Mr. **Lucia**: It is, agreed, a very loose standard. It leaves it up to a judgment factor, but I would think that that would be the standard that would be set, that anything beyond that would be excessive noise.

Mr. **Baron**: Is there much hope that there would be a reduction lower than 86 by 1973, or is that actually going to be, do you think it will remain as industry code?

Mr. Lucia: I don't think it will remain. I think it will reach that level by that time, and I would hope that it would go down still further within the next two to three years. As a matter of fact, I think one of our companies already feel that they can be at 84 during that time frame, but they are not quite sure yet.

You see, the '72 models are already in production. The '73's haven't started yet.

Mr. Baron: You see, one of the problems that bothers me in thinking of the urban environment is that 86 at fifty feet is not 86 at fifteen feet, and 84 at fifteen feet.

Mr. Lucia: But at 86, under the procedure that I listed, was an almost near maximum noise procedure.

Mr. Baron: I know, but unfortunately, as you well know, many of the users of motorcycles enjoy operating them so that they do emit almost maximum noise.

Mr. Lucia: I would presume that there would be operational standards set by the states and cities as well, which would be less than this.

Mr. Baron: For some strange reason this seems to be a fact that should be brought to your attention—I am sure you know it—local governments seem very reluctant to enact legislation curbing motorcycle noise. At least, I know of no effective legislation in that area in the United States.

Mr. Lucia: Well, there are some 100 bills that are out this year that effectively set standards, and they talk to operational limits of 82 dB(A) under 35 and 86 dB(A) over 35.

Mr. Baron: Well, there is, as they indicate, a movement toward reduction in 1971. Complaints against motorcycles have been going on for quite some time.

At any rate, I am aware of your industry's educational program, and I think in terms of the modification of the vehicle you are to be complimented on that aspect of it. Thank you.

Dr. Meyer: Mr. Hildebrand?

Mr. Hildebrand: No questions.

Mr. Plager: I have one or two quick ones. I understand that motorcycles are big in California?

Mr. Lucia: Yes, sir. California has 20 percent of the entire market.

Mr. Plager: Are there two or three or half a dozen states which are the major motorcycle consumers? What states would those be?

Mr. Lucia: Well, there are approximately 3,100,000 registered vehicles on the road in the United States today. I think a half a million, roughly, is the California portion. I have the figures. I don't have them with me. But New York is a reasonably large one, Illinois, Ohio, Pennsylvania.

Mr. Plager: So there are half a dozen states which really involve the major use of motorcycles, the major commercial market for motorcycles?

Mr. Lucia: Yes. Probably six states account for some 35 or 40 percent. I would hazard a guess.

Mr. Plager: I am not going to hold you to it, but just as a general idea.

You state that your industry's position is in support of Section 6(d) of the 1971 act, the effect of which is to make emission noise at the manufacturers' level purely a Federal matter but leave to the states the regulation of use. I can understand quite well why your industry would favor that, indeed, why other manufacturers would. It is a very difficult problem, and there is some need for uniformity, without any question, from the manufacturers' viewpoint.

What worries me, Mr. Lucia, is that I am not sure 6(d) is really what you want. I am not sure it will do the job for you, if that is your concern. Let me pose this question to you and see what your reaction would be.

What would be your reaction if the States of California, Illinois, Ohio and New York were to adopt laws which said essentially that no person may use a motorcycle in our state on the public highways which emits noise in levels in excess of 75 dB(A)? Would that be a law that would be valid? I take it that would be a valid law under Section 6(d), but wouldn't that have exactly the problem and perhaps that would be coupled with a provision that said retailers must indicate at the time retail sale whether that machine can be used on the highways of that state within the laws of the state? Wouldn't that have exactly the problem that you are concerned about, in effect create an obstacle to market in terms of emission standards, really, basically at the manufacturers' level?

Mr. **Lucia**: I can answer that by saying, one, I am not a lawyer. I don't know the legality of it. I don't know whether it would be a suit inequity, or what the case may be. I don't know whether the state has that authority. I don't know what EPA plans to pass out with its new standards.

It would seem to me if it was in the capability of any one piece of machinery, whether it be truck or motorcycle or airplane, if it was within the capability to put out maximum noise emissions at 85 dB(A) or 84 dB(A), it would certainly be unreasonable on the part of the states to set levels of 10 to 12 dB(A) below that.

Mr. **Plager**: How about if they set it two or three?

Mr. **Lucia**: Operationally?

Mr. **Plager**: Yes.

Mr. **Lucia**: Operationally they are doing that at the moment, professor.

Mr. **Plager**: Two or three below the manufacturers' level?

Mr. **Lucia**: Absolutely, moreso than two or three. Four to six.

Mr. **Plager**: Does that create problems for the manufacturer?

Mr. **Lucia**: No, because it is a use thing as opposed to a maximum noise test. A decibel, as I see it, is only as valuable as the testing procedures used for it. If you set a testing procedure which is, we will say, a third-gear testing procedure, then perhaps levels can be down around 82, and operation levels can be 78.

Dr. **Meyer**: I think it would be important to interject at this point, if I might, a very ticklish point that you have raised, Sheldon. I don't think that there is anything in the law as now envisioned that would prevent a state from saying "Thou shalt not operate any type of vehicle between certain hours on certain types of non-interstate traveled streets or highways." But I think there is clear and ample precedent that if an individual came driving up to the border of the state of Illinois in a vehicle which was designed for road use—and correct me, sir, some of your vehicles are called "road machines", I believe, and therefore legally licensed as transportation—I don't believe if he was coming down interstate whatever it is between Illinois and Ohio that you could stop him from going through your state. You might be able to restrict certain hours that he could, but I don't believe you could completely deny him under the interstate commerce provisions of the Constitution, if it was really a road transportation device, from such access. You might tell him he can only go through at five miles an hour during certain hours, but I don't believe you could completely deny him from passing through. It is the same preemption that has been used, getting back to this preemption business. It is the same provision that has been used about the airplane. It has been used about steamboats, railroad trains, and horse-drawn vehicles too, I guess. Of all the people that have studied this problem, you get into some very interesting constitutional problems. That is one of the reasons we have said the use provision is important, because it does allow a state to say you must slow down, you may not use in certain areas. It is completely legal, of course, for a state to restrict the use or completely eliminate the use on public property of devices which are not purely road vehicles, although I don't know what would happen. The State of Delaware, as an example, has completely forbidden the use of minibikes on public property, public roads, or anywhere other than on private property. The device is not considered to be a vehicle of interstate transport.

Now, you are a lawyer, but I am the administrator, and I am asking you to examine what I have just said.

Mr. **PLAGER**: Yes, sir. And I suppose the thing that comes back to mind is the weight limits on trucks.

Dr. **MEYER**: Correct.

Mr. **PLAGER**: And what is the analogy between weight limits on trucks and noise limits, the use of noisy vehicles on public highways?

Dr. **MEYER**: Because, to my knowledge, I don't believe there is any law, although we could research it, that says a vehicle of a certain weight, that there is no road that it may travel on. Certain roads it cannot. It says vehicles of over a certain weight limit are excluded off of the road. That is correct. But it doesn't keep you then from finding a road that doesn't exclude.

Mr. **PLAGER**: As you introduced your comment, I think it really is a terribly sticky problem, and I simply would raise with you, and with the industry the question of whether Section 6(d) doesn't attempt to rather simplistic solution to a very complex problem. I am not sure it succeeds. That would be my only comment.

Dr. **MEYER**: Dr. Dietrich had one other question. If you would like to ask it, then I have one, and then we shall proceed to the next witness.

Mr. **DIETRICH**: As the safety people remind us, the motorcyclist is his own hood ornament, and this is a way of leading into the fact that there is no shielding compartment acting as a noise barrier between the motorcyclist and the machine, and thus he is exposed to rather higher noise levels than the automobile driver. These levels that you have discussed and suggested as the statutory limit in fact would give rather high levels at the motorcyclist's ear. I wonder if your organization has anything in mind with respect to hearing protection for the rider himself?

Mr. **Lucia**: We are in the process now, we have been talking to a private consultant agency to run some tests for us at the saddle as to various noise levels.

We do have a situation there which is a bonus for us. Forty-five states require helmets. There is some shielding effect from the helmet, but whether it is adequate I am not in a position to say.

Mr. **Dietrich**: That brings up a point. You said your organization represents accessory manufacturers, presumably helmets included. Have you any thought with respect to Federal legislation for the noise transmission of helmets, just as there is pending Federal legislation or Federal regulations for safety performance? Do you think that they should be regulated with respect to their noise-blocking capabilities? Have you taken a position on it?

Mr. **Lucia**: We haven't taken a position on this as yet.

Dr. **Meyer**: I have a couple of quick questions and then I think we had better move on.

In some testimony given by Mr. Yost this afternoon, I am wondering whether there was a typographical error in his statement. He said something about there were several types of machines of the same cubic displacement. He mentioned the Triumph made 89 dB(A) while the German-made BMW—you see I know a little bit about some of these things—makes 75 dB(A), and I think I heard you say some of them were down at 82. Are you familiar with these developments?

Mr. **Lucia**: Yes, I am quite familiar.

Dr. **Meyer**: Is this correct?

Mr. **Lucia**: Mr. Yost evidently read my testimony before Congressman Rogers' committee. I recognized when he mentioned it.

There is one machine, the BMW, and I don't mind saying its name, which is down to 75 or 74 dB(A), and the others are up in 84 to 88 dB(A). That particular machine—and I am not an engineer, again, and I can't give you the mechanics of why it operates that way—operates at a much lower rpm than any other engine that is made for a motorcycle, and they have sacrificed certain performances to reach that low level. That is all I can tell you, and I am not sure of my facts, to be honest with you.

Mr. **Dietrich**: I feel I have to comment that I own a 1966 model Japanese motorcycle that is 78 under the same conditions, and it is not a very small machine. It is 29 horsepower.

I am aware, moreover, from the international parts catalogue from that manufacturer, that he made an even quieter model for Switzerland. So I am concerned, just for the record, to state that there are other machines that I have measured, other current models, which are close to if they don't equal the performance of the quiet BMW that you have mentioned.

Mr. **Lucia**: Well, I just have the figures for the Japanese manufacturers. If there is a Japanese such as that at that horsepower, I am not familiar with it.

Mr. Baron: One question, and this is, is the industry concerned that if noise levels went down too low that they might lose some of the sales appeal of the motorcycle?

Mr. Lucia: I think that the industry is realizing that most young people like noise, that it is a fact of life today that is not going to exist any longer. I think if the vehicles are so produced eventually where the noise levels are down, this is all that the man can buy, and then the only thing he can do is modify, and if you stop them from modifying by a proper inspection and enforcement, it will become a way of life in motorcycling, hopefully.

Dr. Meyer: One last thought and then I could like to excuse you, sir. Are any of the minibike manufacturers associated with your organization?

Mr. Lucia: Well, Honda, which is one of our companies, does make a mini, but the U.S. minibike manufacturers, there is only one or two that are in our organization, and have just joined within a matter of three weeks ago.

Dr. Meyer: I see. We are going to be hearing a lot about minibikes over in Denver the day after tomorrow, but I just wondered whether they were.

Thank you very much. I do appreciate your staying, and appreciate the opportunity of listening to you.

Mr. Lucia: It was my pleasure.

Dr. Meyer: As I say, we will be working with you.

I would now like to ask Mr. H. T. Larmore of Construction Industry Manufacturers Association to come forward. Mr. Larmore, it is nice to have you here. I appreciate your willingness to stay and let us hear from you, sir.

STATEMENT OF H. T. LARMORE

Mr. Larmore: Thank you, Mr. Meyer.

My name is H. T. Larmore, Deputy Director for Technical and Safety Services of the Construction Industry Manufacturers Association, CIMA. CIMA is composed of some 180 United States equipment and major component manufacturers who account for approximately 95 percent of the U.S. dollar volume in this multibillion dollar construction machinery industry. Products of represented manufacturers include mobile earth moving equipment, cranes, excavators, haulage, equipment and specialized paving and raw material preparation equipment.

It is used on construction sites which include high-rise building in urban areas, highways in rural and urban areas, reclamation projects in remote areas, airports, utility projects, pipeline laying, and a wide variety of excavating projects. The machinery additionally is used for sanitary land fills, road maintenance, site clearing, mining forestry work and often in heavy agricultural work. It is obvious that any consideration of noise abatement for construction and construction machines involves an almost infinite variety of sizes, types and, combinations of machines and working tools along with an equally complex variety of work sites and adjacent communities .To further complicate these considerations, work sites might involve the use of a single machine or literally hundreds of similar or different machines and activities.

In his statement before the Committee on Commerce Subcommittee on Environment, United States Senate, 30 June 1971, the Honorable William D. Ruckelshaus proposes that primary attention to national environmental noise standards be given to transportation equipment, construction equipment and other internal-combustion-engine devices. In view of this and the proliferation of noise regulation efforts for construction by many other levels of government; it is obvious that CIMA has a direct and compelling interest in testifying at noise hearings such as this.

The Association will generally confine its testimony to the hearing topic, "Standards and Measurement Methods, Legislation and Enforcement Problems", but, for the record, I would like to reference the CIMA paper titled, "Sound Level Considerations by American Construction Machinery Manufacturers", presented at the American Industrial Hygiene Association Conference on May 24, 1971, at Toronto, Canada. This paper is attached to this written testimony and you will note that it attempts to place the problem of noise into its proper perspective relative to construction and construction machines—both as a potential cause of hearing loss for workers and as an air pollutant for the nearby community at construction sites. Also, I would like to reference the individual testimony of many CIMA member companies at a hearing similar to this held in Atlanta, Georgia, on July 8 and 9 of 1971.

The following, as well as the referenced testimony, reflects the awareness of our industry of the new demands on designers and producers of construction machines in areas such as noise. As responsible citizens, we have accepted a responsibility to constructively apply our member company expertise toward helping shape legislation and regulation into responsible and effective documents which give full consideration to the total needs of our society and at costs and compromises satisfactory to the public. Action taken by our Association some four years ago to discharge this responsibility has, we believe, made us uniquely qualified to speak to the hearing topic of "Standards and Measurement Methods".

This action consisted of organizing our member company experts into product-oriented committees to recognize needs for Performance Standards and to promote development of such Standards by nationally recognized technical or Standards writing bodies. They recognized almost immediately the need for the basic tools for all change and/or regulation—Measurement Standards. Without such tools, base lines cannot be established or progress measured.

Prominent among the early Performance Standards needs recognized by this action were the basic noise measurement standards urgently needed as voluntary guidelines for both industry and government regulatory authors.

As previously mentioned, the extremes of variability involving sizes and types of machines, mounted tools, machine groupings, and job site conditions have pointed initial action toward standardized test methods for noise measurement where repeatability of results can be achieved. Broadly based groups of the finest technical experts in the United States are currently working within the framework of SAE technical committees on an accelerated program to develop or update Standards for the measurement of noise at machine operator stations and individual machine noise at varying radii from the machine under standardized conditions. Other SAE technical committees are working on an equally urgent and high-priority timetable to develop Measurement Standards for total construction job-site noise and cumulative operator noise exposure measurement along with standardized reporting methods. All of these Standards should be available in the near future and will add substantially to the "in depth" studies which we visualize are forthcoming to allow the construction industry and government, working cooperatively to property evaluate and to design reasonable and proper noise abatement techniques for construction. CIMA and its member companies, of course, pledge their total cooperation in any such activity.

Dr. **MEYER**: Could I interrupt a moment, sir, and ask that at the time these standards become available they be furnished to us for information?

Mr. **LARMORE**: Yes, indeed.

Dr. **MEYER**: Thank you.

Mr. **LARMORE**: Probably from several different sources, including your panel.

Mr. **MARTIN**: You may not know it. You are on my mailing list.

Mr. **LARMORE**: As indicated in the previously reference testimony, individual manufacturers of construction machines are already using these measurement tools and other more sophisticated noise measuring techniques to identify and isolate those components of their machines which are major contributors to the overall noise levels. Although this may seem to be a most basic approach, it is, of course, the logical starting point for the design and manufacture of the quieter machines of the future. It also has conclusively proven that, contrary to public opinion, complete silencing of the engine exhaust on many types of mobile construction machines may not substantially lower the overall noise level. We find that the sources of noise on such machines are the engine exhaust, engine air inlet, internal moving engine parts, transmission gears, radiator cooling fans, hydraulic pumps and components and other moving parts of the machine. This phenomena is due in part to the non-linear means of adding two or more noise sources together. Previous testimony before your group and technical information with which you are quite familiar preclude the necessity of an explanation of "noise arithmetic".

This complexity of noise generating components of modern, mobile construction machines also points up the impracticality of any major reduction of noise for current machines and that both the construction machinery manufacturers and the government must face the realities of a massive research and development program pointed toward the quieter machines of the future. Even if the public is willing to underwrite the costs of a "cash" program, it is obvious that this "mountain" will have to be climbed a step at a time. Any regulatory philosophy which is designed to impose maximum noise limits on individual machines must recognize that we are working close to the threshold of the art and that, even as new and quieter machinery components are developed, suitable time frames and massive capital requirements must be provided to translate this into actual machines on construction jobs.

This testimony has already started to bear somewhat indirectly on the second portion of the hearing topic— "Legislation and Enforcement Problems". It is our understanding that one of the goals of EPA is to reduce ambient noise, adjacent to construction sites, to levels which are not annoying. No doubt a substantial reduction of noise emitted by individual machines would go a long way toward this goal. CIMA is not basically opposed to Federal regulations which might impose maximum noise generation limits on individual machines measured in accordance with a suitable and precise standard capable of achieving repeatable results. However, we must point out that the development of such limit standards will be a monumental task in view of the literally thousands of individual machine types, sizes and total combinations. This task is further complicated by our belief that government recognizes the urgency to proceed as rapidly and as economically as possible to complete the widely recognized and urgently needed construction tasks in this nation and that noise regulation or abatement plans must not seriously hamper this massive effort.

We also have every reason to believe that government is dedicated to the proposition that such regulation should preserve to the highest possible degree the fierce competitiveness of our industry by the elimination of all possible inequities. Again, CIMA pledges its full cooperation to EPA and the Federal Government in any in-depth study relative to this matter which may be undertaken.

Obviously, some of our testimony has been directed toward the government philosophy of noise regulation for construction as reflected in pending legislation at the federal level such as Senate Bill S. 1016. We are impressed with the language of the Bill which recognizes the need for in-depth studies and reports prior to the creation of definitive standards or regulations for specific and individual machines. The authors of the Bill have obviously recognized that they are dealing with a most complex and sophisticated problem. This is well illustrated by Section 6(a) which recognizes the impracticability, as stated earlier in this testimony, of applying noise limit machine standards to machines manufactured prior to the effective date of such standards.

Our member companies have also generally indicated no opposition to some realistic labeling requirement since the various motivations which are now beginning to create a customer demand for quieter machines will obviously make noise level specifications and comparisons a widely used marketing tool. On the other hand, a noise level labeling requirement would most definitely require measurement to some standardized conditions and CIMA urges that the pertinent SAE Measurement Standards be referenced in any labeling requirement to insure the repeatable results required for certification purposes. It should be further understood that, because of the infinitely variable nature of actual job site conditions, the comparative noise level numbers determined by such standardized test methods would not necessarily have real compatibility with the actual noise impact on communities adjacent to construction sites.

Again, referring to S. 1016, we are greatly encouraged by the prospect of all Federal Government activities relative to noise being coordinated through an agency such as EPA. The prospect of eventually arriving at one single set of requirements for construction machines, definitively stated, would allow industries such as ours, who mass produce machinery and, of course, market on an interstate basis, the opportunity to direct our research and development efforts toward one single compliance goal. By contrast, the chaotic impact of individual authorship of requirements by hundreds of different government entities (Federal, State and Local) is apparent and staggering in its implications.

Of concern to CIMA is the fact that we are unable to recognize current legislative action which spells out the possible relationships between Federal regulatory measures and those which will remain in the hands of the states and local government bodies. We strongly urge that full consideration be given to the interstate character of the construction machinery business and that current legislation in this area be written to effectively prevent interference with interstate commerce by state or local government regulations.

If we are correct in our assumption, that one of the major goals of EPA is to control the impact of construction noise on surrounding communities, then it would logically follow that the state and local governments might play a major role through the application of job site noise regulations or limits, measured at the job site boundaries and variable in order to be compatible with the type of affected communities whether a hospital zone, residential, rural, or other. With this type of direct control over the impact of construction noise on community noise levels there would be necessity for state or local governments to be concerned with setting limits for individual machines as they would be measuring and controling the total cacophony of sound emanating from the construction site much in the same way that they might regulate and control noise from a manufacturing site. In addition to possibly defining a relationship between federal and state/local controls, this proposal would also effectively allow the construction contractor to utilize to the fullest possible extent his well-known ingenuity and resourcefulness in meeting job site controls even with his present construction machinery through proper selection of his machinery fleet for sensitive areas, operational controls, new job techniques and even artificial sound barriers.

We would further hope that the Federal Government with the benefit of the massive amounts of data and information generated by national hearings such as this might develop model or guideline legislation and regulatory procedures for state and local governments in order to achieve a full degree of uniformity and knowledgeable approach at those levels. The very nature of noise itself makes proper measurement a most sophisticated task in comparison with other types of regulatory activities. Accordingly, we would further suggest that some suitable incentives might be developed to encourage state and local governments to follow such guidelines, to properly train noise enforcement officers, to acquire proper instrumentation and to follow the precise measurement techniques as outlined in the SAE Standards as they become available.

In conclusion, we would like to suggest that the public concern over the contribution of construction noise to already higher than desirable community noise levels may well have been generated primarily in the densely populated urban areas. It is in these areas where construction is no longer a transitory or temporary situation as in highway construction in rural areas. By contrast, today's construction demands in urban areas creates an almost solid succession of new construction or the demolition of old. We believe a study of this matter might well be of high priority as it could conceivably reduce drastically the scope of immediate and urgent regulatory activities for construction. It is possible that only a small percent of the million or more construction machines in use are on projects located in urban areas and the extra expense to the public for total noise control for a major portion of the national construction needs can be minimized or eliminated entirely. These kinds of facts need to be determined at the earliest possible moment as it is becoming increasingly important that the additional economic burden on the public of such projects as noise abatement for construction be recognized and maintained within acceptable limits. Again, the Construction Industry Manufacturers Association and its member companies offer our services and strongly urge that we be given the opportunity to participate fully in the area of our particular expertise. We believe that only by involving all interested segments of the construction industry, the public and the government can full consideration of research and test data, safety factors, economic reasonableness and technological practicability be incorporated in drawing up future regulations.

Thank you, gentlemen, for this opportunity.

Dr. MEYER: Mr. Larmore, thank you.

Before asking the panel if they have any questions or comments, do you think it would be possible for the industry association itself to help develop this information? That is, what percent of the machines are actually located in various areas? It is an important thing to know this, I think. You know, the Federal Government can forward a big questionnaire to every architectural engineering and construction firm, but still it would not probably do as good a job as the industry itself might be able to do.

Mr. LARMORE: Well, I am not sure what the capabilities of the manufacturers industry is in this area. Obviously we are affiliated with national user groups such as Associated General Contractors and American Road Builders. And I have been most interested today to listen to some of the suggestions. These broad-gauge groups which encompass several disciplines, this is broadly, I think, what we have in mind, in that we can contribute to an overall effort. Whether or not we are capable of achieving satisfactory results in this one particular area I am not in a position to say at the moment.

Dr. **Meyer**: We might like to discuss with you further how best to get at that.

Mr. **Larmore**: We would be delighted because there should be a way of determining some methodology that would achieve these results.

Dr. **Meyer**: Mr. Martin? Mr. Dietrich? Mr. Baron?

Mr. **Baron**: Well, construction noise interests me very much, that is, construction noise regarding the noise abatement field.

In 1965 the West German government enacted legislation on construction, and the preamble fascinated me. It said the public had been intimidated by the construction industry long enough, that the construction industry knows how to do a job with less noise, and it was about time they got around to the business of doing that.

I am familiar with standard-writing groups. I am a member of one myself. The noise problem from construction has been around for a long time, and I am very curious as to what has so long delayed—of course standards are necessary; we won't debate that point—what has so long delayed the work in the field of developing measurement standards? The same thing occurred for example, with Compressed Air and Gas Institute, which worked in conjunction with its European counterpart in developing the standards for paving breakers and compressors. However, not until our organization brought a quieter piece of equipment from Europe to the United States and demonstrated it did we all of a sudden begin to find some American quieter equipment on the market. So they are a little bit ahead of us in some of these areas, and I am just wondering why the delay. That is one question I would like to ask.

Mr. **Larmore**: May I ask, I think there may be a problem of semantics. Are you referring to the development of standards such as we are working with in SAE, or are you talking about the iron, a machine, a quieter machine?

Mr. **Baron**: Well, your industry has said it needs a measurement standard before it can develop a quieter machine. Isn't that what your point is?

Mr. **Larmore**: That is one point.

Mr. **Baron**: Right, and I just question that point a little bit because it seems to me we know enough about noise control. It is interesting, I think, that a quieter paving breaker, an American one, should come out on the market before the Compressed Air and Gas Institute measurements appeared. Apparently industry could develop quieter equipment without having to wait for standards.

Mr. **Larmore**: I agree with you that our thrust toward standards was to be responsive to one of the hearing topics. I am not belittling the needs for standards. It is probably less needed by the technicians in our manufacturing plants, who have some sophistication in this area, and have been using rather sophisticated test methods. This is well-known.

The need for standards, we think, goes far beyond this, as guidelines for all kinds of regulatory and enforcement procedures. This is one of the thrusts.

If I interpret your question in another way, are you asking why we have been so slow to build quieter machines?

Mr. **Baron**: You tempered my question.

Mr. **Larmore**: This is a good question. It is certainly a question that we can anticipate. The reference material speaks to this issue on the back. I didn't take your time to read this. This is an association, a manufacturing industry position on this. It simply says in essence that we, as many other types of industry, have recognized that we are in business to satisfy our customer demand.

Maybe this is old-fashioned, but it happens to be the thing that has motivated manufacturers and their designers for many, many years. I am sure there is no particular argument about this. Also, it is not a debatable issue. I think that the public demand, which is now being translated into demands at the user level, are of reasonably recent nature, notwithstanding your book, Mr. Baron, and so forth.

Probably, when we get down to the nitty-gritty of this, there are huge sections of the manufacturing business for machines of this type that have annoyed very few people. I am talking about for instance, the huge dirt-moving machines that build our highways across the nation and through the mountains and this sort of thing, as opposed to the air compressor and the jack hammer and the riveting gun, and so forth, which are prevalent in the kind of high-rise or building construction and demolition that affects a lot of people.

We have no particular excuse for this, for whatever tactics we have used in trying to recognize and be responsive to our customer demands. We can only say to you today that as those demands are changing, for whatever reason and motivations they are changing, we are in a position to be responsive. All we need is a reasonable amount of time in those areas where we are starting almost at ground zero, and somebody that is willing to pay the price.

Mr. **Baron**: Well, sir, first, I don't know how you define public demand, because in 1930, as you well know, the City of New York issued a noise report. This could be published today. You take out the words "streetcar" and add "helicopter" and it applies today. So public demand for construction noise reduction I believe is not recent. It may be more vorciferous and articulate, or whatever it is in recent years, but it has existed for many, many years.

It is also, I believe, a fact that the construction industry, talking in terms of the direct dollar and the use of the word "safety" —which usually precludes noise levels for some reason or other— reportedly has one of the highest records for accidents and so on, and it is believe by some that the noise level is partially responsible for some of that poor safety record. So there is a direct dollar saving there in having a quieter technique for construction.

We have also here a thing that you might have some suggestions of how to break up this business of passing the buck, because if you talk to the manufacturer he says "My customer is not acting," and he is, in many cases, not. You talk to the contractor and he says the equipment is not available. You go around in circles, and there is now the Environmental Protection Agency. One of the reasons that we have gotten to the impasse we have as far as water and air pollution and noise pollution and so on is that we have waited for the classic market demand to be operative, and we are paying quite a price for that.

Another point, I would like to challenge this concept that noise is an urban problem, that construction noise is an urban problem. I receive letters from all over the country, and it bothers people in the suburbs, it bothers people in rural areas, roadbuilding and so on. We can't think of this as an isolated problem, so design one percent or two percent of the equipment for the urban area. That also adds another penalty. Urban areas are paying enough penalties now for urban living.

I would like to see research on the actual cost, once you designed a piece of quieter equipment on the manufacture of that quieter equipment, because it is my understanding that the cost of putting that kind of stuff together, once the design is done, is not that expensive.

I ask and call upon your industry. As you know, most of my contacts have been with the pneumatic tool industry, and I have some excellent relationships there. Incidentally, I was invited and did attend the first meeting of the environmental committee of the ABC in Washington, and addressed them. I certainly urge that your industry does move with dispatch to develop quieter construction techniques, because a terrible price is being paid by the environment, whether it is urban, suburban, rural or what have you, and also to the men themselves under the new Occupational Health and Safety Act. There is a direct economic motive in designing quieter equipment.

I believe in my own personal image of today's construction equipment that it is almost as primitive as the old sledge hammer and so on. I think it is a real challenge, and I wish that this kind of attitude could be cultivated. It is a real challenge to come up with equipment that will do the job without the trade-off of environmental degradation in health, discomfort and so on.

Dr. Meyer: Hopefully we are going to work with the industry in our office towards this end.

Mr. Larmore: Has Mr. Baron had the opportunity to read the individual testimony at the Atlanta hearing?

Dr. Meyer: He was there.

Mr. Larmore: Your remarks are duly noted, Mr. Baron, and will not be taken lightly.

Mr. Baron: One other thing I would like to suggest, if your industry could engage perhaps with the EPA in an interim program, because I realize there is some lead time, and so on, of barriers, sheaving and so on, and some of the equipment where you do have a critical situation because it is near a residence or a hospital or school or what have you. This is something that is not very expensive, though there is some cost involved, and I think it would be an excellent contribution to environmental protection.

Mr. Larmore: Thank you.

Mr. Hildebrand: Obviously the smaller companies are not and will not be in a position to pick and choose from a large fleet of machines in order to meet State and local standards.

Mr. Larmore: Excuse me. The contractors, the user companies you are referring to?

Mr. Hildebrand: Right, in order to meet State and local standards for that particular job. My question, is there a feeling by some of these smaller companies that maybe they would be put out of business due to the cost of quieting their operations?

Mr. Larmore: I don't think that I should answer that. I don't feel that I am qualified. They are well represented by their own groups, and it would be somewhat presumptious of me, I think, to comment on that.

Mr. Hildebrand: Thank you.

Mr. Plager: No questions.

Mr. Baron: I have just one comment on this business of costs, if we can draw from the pneumatic tool, the portable air compressor, where once a sub-contractor, for example, has made an investment in a quieter compressor, he then in a short time writes off that additional costs of the quietness, and he has that machine. It is interesting that the increment for quieting is going down somewhere. It was once thirty percent, then twenty-five percent. Now I hear it is ten percent, and in some cases there seems to be very little difference between the quiet and the noisy machine. So I do not believe that this penalty is that grat, and again it is the theme of this whole meeting, that we must think of the human being and the environment.

Dr. Meyer: Thank you very much, sir. I appreciate your time, and we will be in touch with you for some voluntary discussions about some further ways for cooperation between yourselves and the Government. We have appreciated your help in the past.

Mr. Larmore: We will be looking forward to hearing from you.

Dr. Meyer: Now, I have glanced at one of the witnesses who has been sitting here very patiently, and I wish really there were going to be more folks around to hear this one, because it is a rather interesting suggestion. I would like to ask Dr. Belt to come forward.

I might point out that Dr. Belt is an audiologist, and we all know that audiologists are people who are concerned with hearing, so I think what you have to say, sir, will be heard well at this hearing.

STATEMENT OF DR. DONALD A. BELT

Dr. Belt: Thank you. Dr. Meyer, panel members and participants, I would like to introduce myself briefly. I am Donald Belt. I am a research audiologist at Stanford Medical Center. I am also on the Board of Directors of the group as Sensory Evaluation and Conservation. This year we will be testing, evaluating, about 25,000 children and adults. All of this data will be computerized and go into the Stanford audiological data bank, which we hope will be initiated in the very near future through some funding.

In this we will accumulate data on hearing, on noise, and all other pertinent factors that we can put into this data bank. This is part of a multi-disciplinary program at Stanford, which we hope to kick off in the very near future.

I am also in clinical audiology at the Sunnyvale Medical Center, where I often see, must deal with patients who have had their hearing damaged as a result of noise exposure, either through accident or long-term noise exposure.

I am also a consultant to industry in hearing conservation, and I feel that I am tuned in to some of the practical problems of hearing conservation.

The following views that I present, however, are my own, so I will go ahead with that.

With each decade, environmental noise increases by a factor of ten. Accordingly, the energy of environmental sound today is a thousand times greater than what it was at the onset of World War II, and by the year 2000, the increase will be a millionfold. But we need not wait for the year 2000 to assess the enormity of the impact of noise on hearing. For even today, hearing loss is our nation's number one physical impairment. The primary cause of permanent hearing loss is exposure to loud noise. Tens of millions of our nation's workers face the hazards of industrial noise daily, while our young people are exposed to the deafening sounds of hard-rock music. Almost no one can escape the daily road and intrusion of airplanes, trucks, motorcycles, and cars. The inestimable toll in hearing loss from past and present wars should not be forgotten. While these facts in themselves, attest to the enormity of the problem, the impact of environmental noise goes beyond physical damage to hearing, with far reaching implications for each and every individual.

In spite of a vast accumulation of knowledge, the average person is almost totally ignorant of the profound importance of hearing in his daily life. Few people would name hearing as their most valuable sense, yet we constantly rely upon hearing for orientation and contact with our environment. For twenty-four hours each day, sounds in the environment signal danger, give pleasure, and provide information.

Psychologically, we hear and relate to sound at three levels. At the first level, there is an unconscious awareness of continually changing background sounds which establish an essential link with our vibrant world. To a person who is deafened, his world is correspondingly dead. At the second level, one is consciously ware of factual information conveyed by the sounds in the environment. From the tiny buzz of a mosquito or the thunder of lightning many miles away, a message is brought for the listener to act upon. Sounds may warn of danger that the eye cannot see. A car and truck approaching from different directions can both be heard simultaneously but the eye can see only one at a time. The direction of an unseen sound can be accurately located. Also at the second level of hearing, sounds from music or nature may bring esthetic pleasure to the listener. The myriad sounds in our environment elicit a full range of emotional response, differing according to each personality.

At the third level of awareness, we find the sounds of spoken language enormously important in determining man's interaction with others and his sphere of influence over his environment. For example, the sound of a mother's voice provides the basis upon which the baby ultimately developes language and speech.

Noise repeatedly intrudes and interferes at each psychological level of hearing. The extent of the annoyance and stress produced in a given individual at a given time is impossible to determine. The psychological effects of noise commonly reported, often disappear when subjected to scientific scrutiny in the laboratory. None the less, one must give credence to individual complaints about the effects of noise. The lack of scientific proof is not a sufficient basis for denying the existence of psychological effects of noise. Indeed, it points up the limitations of scientific methodology in dealing with certain types of problems.

Technically, noise is any sound unwanted by any individual. But we are concerned here today not with noise per se, but with noise pollution. There are several distinctive characteristics of noise pollution.

One, noise pollution is pervasive. It affects many people, may cover a relatively wide area, and be present during varying intervals over a large part of the day.

Two, noise pollution emanates from a man-made source, and those who must bear listening to the sound have no practical or expedient means of control over it. Noise trespasses the physical boundaries of private property and resonates through walls and windows. Sound barriers against noise pollution are of limited effectiveness and prohibitively expensive for the homeowner.

Three, noise pollution interrupts, annoys, distracts or otherwise serves to intrude upon the individual's normal psychological processes which use sound as a media.

Fourth, beyond the psychological impact of noise pollution, its energy level at times, reaches a proportion sufficient to cause permanent physical damage to hearing.

All of us are victims of noise pollution, yet we as individuals are guilty of contributing to the problem. Unfortunately, much of our behavior has been dictated by short term economic interests, with disregard for the effects of noise upon others. In the past, there have been examples which demonstrate that people will not pay for a quieter engine or a quieter home in which to live. In this sense, noise is cheaper than quiet, and hence the proliferation of noise. It is here that a solution suggests itself. I submit that when it is cheaper to own and use a quiet machine than a noisy one we will be well on the way toward restoring tranquility in our environment.

Toward this end, I am proposing that a Noise Emission Fee be assessed annually, or at otherwise practical intervals on each motor vehicle, at a rate proportional to the level of noise it produces. I also propose that taxes be levied on selected tools and machinery which are known to contribut to noise pollution. For example, this might apply only to tools used outdoors which have potential for damage to the hearing of the operator and also create a potential nuisance for others within the range of the noise produced. Regulation and enforcement of these standards would be handled by the appropriate State agencies, and coordinated by a Noise Control and Abatement Office.

Secondly, I propose that all domestic and commercial machines and motor vehicles be labeled with their noise emission characteristics. Labeling should include criteria or standards by which sound level measurements are made. Measurements should be made at one or two feet for hand-held equipment, and for any other machine or vehicle which would be operated in close proximity to one or more persons. A caution statement should be included when the user can be exposed to potentially damaging levels of noise. In establishing standards and controls over noise emission levels, it is important to take into consideration the hearing of the person operating the machine or motor vehicle. Many machines and motor vehicles currently used have potential, and do in fact, cause permanent hearing loss. In almost every case, the damaging effects of both commercial and domestic sources of noise can be prevented by using ear plugs and/or taking other precautions. In this regard, I am proposing a public education program and information office which would utilize the various media for the dissemination of information about noise, hearing, hearing loss, hearing conservation, and all other pertinent aspects of noise pollution. These programs would be funded from noise emission fees collected.

The educational aspect of dealing with the problem of noise pollution is especially important, because the onset of permanent hearing loss from noise exposure is usually insidious and deceptive. There is no pain, no bleeding. After noise exposure the individual may have the feeling of a temporary hearing loss, some ringing sounds in his ears, and a slight decrease in his ability to communicate effectively. After resting overnight or over the weekend the symptoms seem to disappear, leaving the person with the impression that his hearing has returned to normal. The fact is, that the hearing does not completely recover and after many repeated insults, an accumulation of effects bring about a significant permanent loss of hearing.

I might just mention, in referring to the chart, that I am proposing that—the chart is basically, as indicated here, a continuum based on noise emission levels. I also have included in this chart, you will note, using three scales, the A, the B and the C scale. There is widespread ignorance with respect to the use of the A scale. Commonly what one hears is that the A scale correlates very closely in its attenuation characteristics to human hearing. This is in fact not true in terms of the application of the A scale, which is to measure high-level noise. If we had some chalk I could show this very briefly, but essentially what happens is that our ears respond with this saucer-shaped characteristic, which means that our ears require more energy in the lower frequencies and more energy in the higher frequencies before we can hear those sounds.

At levels—and I am not going to discuss sound pressure level versus hearing level, but at higher levels our hearing and our perception of loudness flattens out, so that the loud sounds are about equal. The lower frequencies, mid-frequencies and high frequencies take approximately the same amount of energy to receive these sounds.

I think I could show this better on the blackboard. Hoping that you will understand it, I have suggested that these scales be used as they were intended, using the A, B and C scale, which reflect attenuation characteristics as they relate to hearing.

That concludes what I would like to offer.

Dr. **Meyer**: Well, thank you very much. I am sure that some of the people from industry may have some interesting reactions to the fact, as with the case of the sulfur oxide tax and some other taxes, that someone has actually come up with a proposal as to a noise tax. Clearly this is one way of getting at, shall we say, forcing the state of the art.

It is, as I say, doctor, a very interesting concept, and obviously one to which you have given a lot of thought.

I would also, sir, your description of the problem well stated. In that we are in the process of writing a preamble to one of our reports, I may want to include some of the language used here.

I am sure some of the panelists may have some questions about this particular presentation. Again remembering the lateness of the hour, but the importance of the subject—Mr. Martin?

Mr. **Martin**: No questions.

Dr. **Meyer**: Dr. Dietrich?

Mr. **Dietrich**: I am very pleased, indeed, also to see that direct application of the economic penalty in order to straighten out, so to speak, correct for the hidden costs that society pays. But I am a little concerned about the difference between the pollutant noise and other pollutants such as sulfur oxide, in that I don't believe that those who, say, discharge sulfur oxide do it for the fun of it. I think they do it because it is cheaper than to control them. But we have had some testimony here today with respect to noise that some of it is discharged into the air for the fun of it, and I wonder if you have any thoughts about those who perhaps pay more to get a noiser device, to get a motorcycle or a hi-fi system, who would perhaps be willing to pay a little more in order to operate it.

Dr. **Belt**: This is very true. The loudspeaker industry is a good example of this. They had to tool up to handle the 100-watt amplifiers a couple of years back. The prices of all the equipment went up.

I have in my background been both a truckdriver and a motorcycle operator. I had a big Harley, and I had no muffler on this, and I enjoyed the noise. I know in talking with truckdrivers and motorcycle operators that this is deliberate, not necessarily malicious but there is a certain enjoyment associated with it, and I think there tends to be a disregard of the fact that as I drive my motorcycle down the street I may affect ten thousand people. I may interrupt their sleep, I may interrupt their conversation. As I say, I am not doing this consciously while I am riding my motorcycle. I am doing it because I like the sound of it.

Mr. **Dietrich**: I am very pleased with that comment, because I think that, to me, at least, seems to suggest that this is a way of bringing this back, the impact upon the public, to the attention of the noise polluter. Even if he is willing to pay your additional penalty, at least he recognizes it is not at zero cost to society, and here's a bill for that cost.

Dr. **Meyer**: The only thing that kind of surprised me some is the fees might look a litle low from that viewpoint, but again, that is up to the local communities.

Mr. Baron, do you have something?

Mr. **Baron**: My only objection would be that one that the fees are too low.

It is interesting, because what you are suggesting, which also the British Noise Abatement Society has long watched for, it is the reverse—and I am sorry I didn't get a chance to bring this up with the gentleman from CIMA, that is, the tax write-off, which is one approach that is given. In other words, if you do some research and design quieter equipment you will get a tax write-off, and this is the reverse of that. I think there are many who would probably rather see this kind of penalty.

However, if the fees are low, for example, for violating construction noise laws you may get a penalty of $10 or $25, and as you well know, what happens is you pay the penalty rather than modify the construction procedure. What you may do actually is write-in a thing that by paying $20 a year you keep on using that noisy jack hammer or that noisy compressor. So I think more thought has to be go into the concept of making it inexpensive to continue polluting rather than going ahead with developing quieter designs. There is that danger there.

Dr. **Belt**: Yes, and the numbers, the main idea in that chart is to show that I am trying to express that I feel this should be on a continuum. The people who make the most noise should pay the most, and that money in turn would come back in terms of research, public education, so there would be a spin-off from this.

Mr. **Baron**: What do you mean by continuum?

Dr. **Belt**: In other words, if you don't make very much noise with your jack hammer you don't pay very much, or with your car or with your motorcycle.

Mr. **Baron**: Yes, but you say I can have a jack hammer which does 105 by paying $16 a year.

Dr. **Belt**: What I am saying, I don't mean to say these dollar amounts are absolute. We could multiply them all by ten but still retain the concept of the people that make the most noise should contrbiute the most.

Mr. **Baron**: I understand, but this would be a one-time, annual—

Dr. **Belt**: No, not at all. I think that this should be done on a repetitive basis.

Mr. **Baron**: Annually?

Dr. **Belt**: Possibly. I am not sure this is feasible.

Mr. **Baron**: I mean I don't mind the $20 extra for the jack hammer if it is a daily assessment.

Dr. **Belt**: Maybe this is what is necessary. Personally I think it should be done on some kind of repetitive basis, I think there should be enforcement, monitoring associated with this, and I think that it would involve a much broader program than I have implied by this.

Mr. **Baron**: If we don't get into the trap, there is much that is going to be said on the tax write-off thing, and we don't know yet which will bring the desired environmental standards into being. I would like to see this carefully checked out so it does not become a device for maintaining the noisy status, even though there is a spin-off.

I want to commend you for working this out in the detail that you have.

Dr. **Meyer**: I think you need to look at both of those, Alex, not just this one but also the tax write-off.

The fact that intrigued me is we are talking about all these costs here. Somebody is saying quit talking about this, let's come up with an idea, and it is one of the things that needs exploring, particularly if we are talking about model laws. We may want to suggest some sort of approach like this in model laws later on. We have to explore it.

My legal colleagues?

Mr. **Hildebrand**: No questions.

Mr. **Plager**: I hate to be the wet blanket on this one, but I think there are some really very difficult problems with this proposal, Dr. Belt. The idea of effluent charges is not unknown, and there are a couple of problems with it that are really magnified in this particular area.

The idea of effluent charges, originally developed in the water pollution area, I believe, made sense at least to this extent. To the extent you are dealing with a corporate polluter, the corporate polluter's primary motivation, presumably, by various basic concepts of what a corporation is about, is to make money. There is nothing wrong with that. It is part of our basic economic structure. The idea of the effluent charge was to demonstrate to the polluter that it would cost him more to continue to pollute than to solve his pollution problem.

Now, the criticism of that, of course, is that he may not see it that way, and, depending of course on how you set the scale of costs, it may turn out that what in fact you are doing is selling the environment to the industrial community. That is one of the reasons, I think, why effluent charges haven't really caught on, because nobody is quite sure just exactly where that line has to be in order to make sure we are not simply selling the environment off rather than making it economically motivation for the corporation to solve its pollution problem.

It is also understood in that kind of a context that the cost would eventually be passed on to the consumer, and one effect of that, you see, would be to put out of business the marginal producer, who is staying alive by the fact that he is utilizing public resources as part of his activity. In other words, he is externalizing his production costs by using free air and polluting it, and he will go out of business when he really has to pay the cost of what that air is and what it costs to clean it up.

Now, your proposal, it seems to me, raises a couple of serious problems with that kind of context in mind. One of them is you are putting the fee directly on the user, so that in effect you are bypassing the manufacturer, you are bypassing the industry, and in a sense you are depriving the industry of the motivation to improve its own product. Now, perhaps one way—and I guess my question to you is—would it be one of your ideas that the labeling which you call for might also include a clear statement of the noise charges in such a way that consumers could make a knowledgeable judgment as to what the total cost of that product will be over time? Not only the cost of buying it, but the cost of using it.

Dr. **Belt**: Yes, exactly.

Mr. **Plager**: Would you see that as an important part of your scheme?

Dr. **Belt**: Yes, I would. I am not an economist, but I have the feeling intuitively as a shopper and consumer, in looking at the advertising, that the cost is an important factor to the consumer in general.

I would also say that one of the comments that I have gotten from industry with respect to the hearing conservation program, industry has been very resistant to the Walsh-Healey act and to the standards that were developed by California State, and I am starting to get comments like "My competitor is paying for it. I will pay for it now." And I think this is an important point, that when there is a price attached to noise, I think it is going to spiral downward. I think this is the way we think, that we think in terms of how much does that cost, and if there is a label that says this is so many db's that is going to be translated into dollars.

Mr. **Plager**: That would certainly help, I think, but there is one obstacle that I don't see an immediate solution to in your proposal, and that is to the extent that the charge is levied against someone who is not economically motivated primarily. Again, if you levy it against the manufacturer, he is not emotionally committed, you know, to the nose guard on his car if it doesn't make money for him. What do you call that? The symbol. But you may find that you have a substantial part of your populus who are emotionally committed to noise, and won't the effect of this scheme, unless you attach such prices as to make them completely confiscatory, won't the effect of this scheme on dealing with that part of the population really mean that you are licensing pollution?

Dr. **Meyer**: Well, one of the things that sort of intrigued me, Dr. Plager, was assuming we have some Federal standards written, where the onus is on the manufacturer. Now the community wants to enact use restrictions. It is the same thing we are talking about. Do you want to put shielding walls around a construction site or do you want to pay the price? It was made up very nicely.

Mr. **Plager**: I think that is good model of where it might work.

Dr. **Meyer**: It might work very well, you see.

Mr. **Plager**: But what are you going to do about the motorcycle enthusiast who puts all his money into the biggest machine that he can get and it is critical to him that he be able to go vroom vroom at maximum decibels.

Dr. **Meyer**: Well, if you have a Federal standard or State standard on it, presumably we, being reasonable people, are going to set these as low as consistent with economy, technology and the state of the art, and reasonably, with all the tests that the law would require, so he wouldn't be able to go vroom vroom no matter what price he wanted to pay. He wouldn't be allowed to violate the standards.

Mr. **PLAGER**: You would then see this as a supplementary procedure in certain aspects?

Dr. **MEYER**: Yes, yes. It would be a tool. Just thinking about it—I am just thinking aloud—it would afford the states and the cities a means of taking some of the sting out of the preemption, because it would really provide them with a very effective lever to require industry to do better than standards. This may be the wrong place to prolong it, because we are getting near the end of the day. But people are looking at standards and saying, you know, that is what everybody is going to shoot for. Well, hopefully you would like to have some incentive so people do better than standard, no matter what the standard is.

People toss some words around like you are going to put a Federal floor on this thing, but we would rather you have a Federal ceiling. This might help solve that problem.

Dr. **BELT**: I am glad you brought out this point, because I envision this as part of a total program, with national standards and regulation, and enforcement and the total thing.

Dr. **MEYER**: I don't want to shut this discussion off, but we are indeed at a very late hour, and I would like Mr. Van Demark, of the Motor and Equipment Manufacturers Association to come forward.

Thank you very much, professor. You can see you opened up a Pandora's box with your paper.

STATEMENT OF RALPH W. VAN DEMARK, MOTOR & EQUIPMENT MANUFACTURERS ASSOCIATION

Mr. **DEMARK**: Mr. Chairman, gentlemen of the panel, my name is Ralph Van Demark. I serve as Director of Engineering Services for the Motor and Equipment Manufacturers Association.

MEMA is a trade organization composed of over 500 manufacturers of automotive parts, equipment, accessories, chemicals and tools, with plants located throughout the United States. As a trade association for the manufacturers of these automotive products, MEMA's membership is comprised of manufacturers of virtually every piece of equipment that is employed in, or in connection with, the servicing of motor vehicles. While MEMA is recognized in the industry as the trade group for the manufacturers of automotive replacement parts and equipment, a significant portion of the membership also supply the original equipment market.

I also serve as Executive Secretary of the Automotive Exhaust Systems Manufacturer's Committee (AESMC), an independent trade group comprised of exhaust system manufacturers. The manufacturers within this group represent the major production and sales of replacement exhaust systems as well as major suppliers to the vehicle manufacturers or the original equipment market. This independent group has retained the administrative services of MEMA.

In this dual capacity, I have been active in the monitoring of both Federal and state legislation affecting automotive exhaust systems and vehicle noise, and both MEMA and AESMC are vitally interested in the EPA's noise abatement program, proposing Federal legislation dealing with noise, concurrent state proposed and enacted legislation, and enforcement activities in regard to vehicle noise.

We heartily endorse the basic principal that "excessive noise" adversely affects the public health and welfare and we also firmly support the control of such "excessive noise" by regulatory agencies. Quite simply stated, for example, the AESMC's business, in large part, is based on the principle of noise control, i.e., production of automotive mufflers.

As you are perhaps aware, little federal control of automotive noise currently exists, if any, and until very recently most states had but a general statutory provision in their vehicle codes relating to automotive mufflers patterned after the National Committee on Uniform Traffic Laws and Ordinances recommendation as follows: Section 12-402—Mufflers, prevention of noise. (a) Every motor vehicle shall at all times be equipped with a muffler in good working order and in constant operation to prevent excessive or unusual noise, and no person shall use a muffler cutout, bypass or similar device upon a motor vehicle on a highway. Revised 1968.

(b) The engine and power mechanism of every motor vehicle shall be so equipped and adjusted as to prevent the escape of excessive fumes or smoke.

Section 12-402, Uniform Vehicle Code, revised 1962.

In many states similar terminology has been adopted as law including reference to original equipment mufflers or exhaust systems, as follows: No person shall modify the exhaust system of a motor vehicle in any manner which will amplify or increase the noise or sound emitted louder than that emitted by the muffler originally installed on the vehicle.

Unfortunately, the lack of a concise definition of "excessive or unsual noise" has created an entirely subjective play it by ear problem in enforcement, and comparison with the original muffler has been based not on noise performance, but the easier visual comparison of physical characteristics of size and shape. Since replacement mufflers do not necessarily have identical physical dimensions, although generally equal or perhaps superior in noise performance to original installation mufflers, this has been an enforcement problem for many years.

In the past two or three years several states have enacted vehicle noise legislation incorporating decibel limitations and testing procedures. I stress that this is total vehicle noise legislation—the sum of the interaction of many vehicle noise sources—engine, fan, air compressors, tires, driveline, exhaust, et cetera. In most cases this legislation has not voided or superseded the existing general muffler statute, although it is assumed by many to be legislation directed at mufflers only.

These decibels standards and testing procedures have been adopted in some states for both new vehicles—before initial sale —and vehicles in use—after initial sale.

For example, prior to the 1970 legislative sessions only two states, California and New York had enacted decibel limitations for total vehicle noise. New York has a single 88 dB figure for all vehicles, car and truck, new and used, which is not actively enforced and California has separate decibel limits for new and used, car and truck, and enforcement procedures have been actively attempted.

In the 1970 legislative sessions some nine additional states proposed legislation of this type. None was enacted. California and New York also had at least a dozen such bills introduced during 1970, proposing changes in their existing laws.

In the 1971 legislative sessions, some 26 states had legislative bills introduced dealing with vehicle noise. Colorado, Idaho, Indiana, Minnesota and Oregon have enacted such legislation. Several more may yet be enacted. California has approximately 15 additional bills on vehicle noise pending; New York had 12 such bills; all vehicle noise, introduced during its past session.

Of the seven states currently having such legislation enacted, considering the variable of decibel limits, test procedures, and application to vehicles, each state standard is different.

Many of the proposed bills specify various db limitations and testing procedures. A db range of 90 to 70, which is a 20 dB reduction, or approximately a 90 percent reduction in sound pressure level, is reflected in the proposals. Testing procedures vary as "none specified" and "to be adopted" and measure at 5.5 feet; 10 feet; 23 feet; 25 feet; 30 feet; 50 feet; 66 feet; and 200 feet; and measure below 35 mph; above 35 mph; at 30 mph; 60 mph and zero mph; and measure on a one percent grade; at constant speed; at wide open throttle acceleration; at wide open throttle constant speed with brakes applied. They measure with engine at operating speed; engine at 60 percent maximum rpm et cetera, et cetera.

We feel confident that EPA's expertise encompasses the recognition that the sound level, that is, the db figure specified as a limit, is not meaningful without a distance specified for measurement and will vary inversely with a change in distance, and further that the noise generation characteristics of the complex systems comprising an automotive vehicle vary with its operating mode.

Thus, we can all appreciate the dilemma posed by such an array of variation with state standards for total vehicle noise.

Interestingly, HR 6002 introduced in Congress this year in Section 501(c)(1) titled "Control and Abatement of Motor Vehicle Noise" appears to specify dB(A) limitations without consideration of a measurement distance. The Congressman introducing this bill, stated in recent testimony, that these standards were the State of California's standards. Unfortunately, this is only partially true; it's lacking the measurement distances and procedures.

California has become a recognized leader in pioneering state legislation and, although many of the state proposals specify various limiting total vehicle noise levels and various measuring and testing procedures, more often than not, they are patterned after California legislation.

It has been noted that California's noise control legislation has been incorporated in some of the proposed noise control legislation being considered by the Congress. In this regard, we would stress that California's program has not been particularly satisfactory in accomplishing its desired results. This is evidenced by at least fifteen additional bills introduced in the current California legislative session affecting vehicle noise. California's test procedures are adopted from the Society of Automotive Engineers standards for measuring vehicle noise. These California procedures call for a microphone placement fifty feet from the roadway and an area clear of noise reflecting surface such as parked vehicles, hillsides, buildings, bridges or trees, with a 100 foot radius of the microphone and the roadway. Clearly, then, these procedures are not adaptable to urban or residential areas where vehicle noise, if excessive, is most unwanted. California's enforcement officials are today attempting to develop reasonable test procedures to overcome this deficiency.

As we are sure the EPA intends, any automotive noise standards and test procedures adopted must be reasonable. Great care must be used in developing reasonable standards because of the multi-faceted interacting and subjective variables constituting and effecting excessive noise. Consequently, although we acknowledge that excessive noise adversely affects the public health and welfare, we note that most background technical data available today is rudimentary, and should not serve as definitive criteria for noise control standards in the absence of extensive testing and verification.

Thus, in regard to the establishment of noise control standards, and the growing number of states enacting uncommon vehicle noise control legislation, MEMA and AESMC recommend the adoption of a common Federal standard, reasonable and proper, that would assure uniformity in application. Such a Federal standard should, in our view, preempt existing state standards, as does Section 6(d) of the proposed HR 5275. In view of the differences of presently developed test procedures, for establishing and administering such standards, MEMA and AESMC recommend that extreme caution be exercised in the establishment of a Federal standard and in particular in regard to the establishment of test procedures. In our opinion, the present procedures are not adequate to accomplish the desired objectives.

The AESMC has formed an engineering and technical subcommittee which has been engaged in the development of both a reasonable and practical test procedure for the measurement of total vehicle noise. The subcommittee is comprised of engineering personnel from the member manufacturers and thus contains perhaps an overall expertise in this area difficult to surpass.

The subcommittee has developed preliminary test parameters for a static vehicle noise measurement procedures. We feel that a static test is quite practical for inspection and enforcement programs and quite reasonable in achieving control of automotive noise. AESMC would be pleased to share its expertise in this area with the agency.

We would also like to comment on the labeling provisions contained in the legislation under consideration by the Congress and EPA. Preliminarily, it should be noted—and the Congress has received expert testimony to this effect—that there is at the present time no evidence that automotive noise is potentially dangerous to human hearing. Absent such evidence, there does not appear to be a health need for labeling automotive products.

Further, our previous comments regarding noise control standards and procedures were made in relation to total vehicle noise. The present lack of technology and expertise currently apparent in noise control standards and procedures would make the labeling of vehicles fraught with difficulty, but the concept of labeling in terms of individual automotive parts is imponderable in its implications. For total vehicle noise is composed of the interaction of many noise sources: engine, fan, air compressors, tires, exhaust and muffler systems, et cetera. Such automotive components are part of the original new vehicle package but are consumer purchased individually as replacement parts from many manufacturing and supplier sources.

Clearly, the labeling of such products is meaningful only in relation to the original individual component in the original total vehicle package. Thus, a correlation between laboratory and vehicle installed component testing is required. The multiplicity of the variables involved—vehicle make, model, engine, operating modes, et cetera—coupled with the complicated nature of noise measurement techniques, makes such a labeling requirement both practically and economically unreasonable.

Thus, MEMA and AESMC recommend that automotive parts be excluded from labeling requirements contained in any legislation approved by the Congress or regulations adopted by EPA.

MEMA also expresses concern regarding noise control standards and labeling for consumer use that would be expressed in decibel ratings. The decibel is a logarithmic unit, without absolute value, that would be most difficult to make meaningful to consumers. For example, the combined noise level of two 80 decibel noise sources is 83 decibels not 160 decibels. The subtraction of an 83 decibel sound from a total 84 decibel sound results in a remaining 77 decibel sound. A reduction of sound pressure level from 80 decibels to 70 decibels is not a ten percent reduction but an approximate 70 percent reduction. Thus, a consumer's interpretation and comparison of decibel ratings on products would not be meaningful without extensive and comprehensive explanation. We would recommend further that noise control standards and labeling provisions be expressed in terms, perhaps newly developed, that would be more meaningful to consumers.

MEMA and AESMC appreciate this opportunity to present their common views on automotive noise control and the related legislative proposals. The Association shares your continuing interest in reducing harmful and irritating noise; our comments have been offered in an attempt to assist the EPA in the enactment of reasonable and meaningful automotive noise controls.

Thank you.

Dr. MEYER: Mr. Van Demark, thank you very much. Even though it is a late hour this is a very useful presentation because it gives us some insight into the depth of your organization's activity and interest.

Now, let me set your mind at rest as well as those of your member companies on one thing. There was never any intent in the labeling provisions of any of the legislation to attempt to deal with the labeling of individual automotive parts. That wasn't the intent of the labeling requirement, and I am sorry you all got off onto some fear, but I guess that is normal.

Mr. VAN DEMARK: Yes, in our experience with legislation I would say that is normal.

Dr. MEYER: That would be normal, but let me clearly set your mind at rest, that we are aware of the technical things such as you have included in the conclusion of your statement. There are some of us who possess some small degree of expertise in the field, and hopefully we will be able to educate those who do not have, from the administrative viewpoint.

We certainly agree most whole heartedly with the need for a meaningful approach to the labeling requirements. I have so testified before the House and Senate, that we felt that whatever we put on a label had to have some meaning, and that most people did not really understand decibels, and that we were going to have to approach this in a very realistic manner, and may have to have, as you pointed out, perhaps some new approach.

There may be some specific items which might have to be labeled, but as far as attempting to label an engine specifically, no. In fact, the labeling requirements were never conceived as being applied to those products which a standard would be set for. I want to be sure that you understand that the labeling requirements were included in the law primarily for those items which the consumer had a choice on which the Federal Government was not going to set a standard for. I want you to understand the intent of the labeling requirement. If we set a standard, for example, or even if the states set one—You see, the state can set standards for products that we don't set, under the law, and we would encourage them not to come up with both a dual standard and a labeling thing, because theoretically in setting the standard you take into account health and welfare considerations. In fact, you are required to. So you set a standard to protect the health and welfare.

There might be some instances in which you might also put a label on, but I can't really think of any.

Mr. VAN DEMARK: Hasn't it been in testimony before the House Committee, I think the subject was discussed and I think it was implied by several members of the subcommittee, for example, that automobiles, the total vehicle, would be labeled, so as to give the consumer a choice of the quieter of two automobiles?

Dr. MEYER: Not in the session that I attended. It could have happened at some other session.

Mr. VAN DEMARK: It wasn't within the testimony. It was in a question from the subcommittee itself that this point of view was expressed.

Dr. MEYER: We would certainly have to research the legislative history, but the primary intent of labeling has not been aimed at that purpose at all. It has been like talking about three washing machines or three vacuum cleaners. We, to the dismay of some folks in the machine tool manufacturing industry, might very well require labeling of machine tools that we might not necessarily set a standard for, so as to help our colleagues in the occupational safety and health area, Labor, HEW, in identifying those machines which the operator might not otherwise be aware of, in the plant.

I don't want to get into a debate. I am just saying that the worry you have about labeling all of these miscellaneous components is not presently in our concept of the requirements of the law.

Mr. **VAN DEMARK**: Might I ask you this, sir? I think in that portion of the bill it makes reference to the fact that there would be labeling requirements for products that are produced with the function of reducing noise.

Dr. **MEYER**: That is the one point I was going to say. A muffler might very well have to carry a label because of that requirement. That is, however, the only device I can think of at the moment which would be involved, and even there it might not, because the law would provide for the Administrators discretion in requiring labeling on those products which constitute problems from a health and welfare viewpoint, or whose use for control of noise would require specific product identification so the customer would be advised of their efficacies.

Mr. **VAN DEMARK**: Well, I appreciate your comments regarding the intent. However, I feel that the letter of the bill as written doesn't really express the intent as you have it. Your feeling makes me feel a little bit more comfortable. I do believe that the fear is not completely unfounded, in that we have had testimony here today for the California officials regarding a bill Assembly Bill 1046, which ultimately is aimed at labeling, or certification that would include labeling, of mufflers and so forth.

Dr. **MEYER**: Well, as I said, I can't really see any objection to labeling a muffler or exhaust system. I think that one very well might. But when it comes down to talk about labeling a fan as a component of a larger element—

Now, it is also true that in certain installations—and the air conditioning people talk about it—they have already come up with a voluntary fan noise emission. We have heard about this in Dallas.

Mr. **VAN DEMARK**: I find it hard in my mind to make the difference between the fan and the muffler, for example, that you are making at the moment, from the standpoint that the muffler by itself is of course you realize, doesn't generate any noise, and it would be difficult to put a rating on that muffler without its being in combination with an engine, within that combination within a total vehicle, and ad infinitum, from the variables stacking up.

Dr. **MEYER**: Maybe I misunderstand how most of these mufflers are sold, but when one walks into a motor vehicle inspection station and gets told he needs to get his muffler changed, he drives around to the repair shop, and they have got them hanging up on the wall. Generally speaking the repairman consults some sort of table or chart to determine what vehicle it is supposed to service. Generally, it has to be hung in a very confined space, so he does that. So I guess the only sensible labeling approach would be: "as designed for this particular vehicle, this muffler will produce X dB reduction."

Mr. VAN DEMARK: That is the current practice, by make and model of the vehicle involved, yes, sir.

Dr. MEYER: That is one area I can see, but I can assure you—you were talking about air compressors and all the components—we would recognize if it is going to be mounted on a vehicle—this has been brought up to us before. The truck manufacturers and everybody else said, you know, your law ought to really deal with the vehicle itself. So certainly in the initial phases of the implementation of any legislation we are not going to try to get into the labeling of all of this multiplicity of components of motor vehicles.

Mr. VAN DEMARK: I appreciate that, and I am thankful.

Dr. MEYER: It may come later, when we have got the noise levels of the environment down to the place where this becomes a significant control device, but I just can't envision in the first ten years of work of this legislation our trying to get this.

Now, we very well may come to you and say voluntarily, as part of the government-industry voluntary effort, will you work to see to it that these components are designed so that they produce the least noise possible, and develop standards as the home ventilating and air conditioning people have, particularly the fan people. They testified to a voluntary rating system so that people who assemble parts and put them on a finished product will have sort of a shopping list of devices. That very well could be done.

Mr. VAN DEMARK: Would I construe your comments to indicate that, for example, the automotive muffler would not be included in the labeling requirements?

Dr. MEYER: That was the one I said that very well might be. That one very well might be. That was the one exception I made.

Mr. VAN DEMARK: I stress that, sir, just to support our fears as being not completely unfounded and the fact that the bill as written doesn't enumerate the parts which are to be covered or which are not to be, and it becomes a judgment factor, and that is why we have the fear.

Dr. MEYER: Well, I would only say, without extending this discussion any further, that one has to come to grips in implementing any legislation with the real world, the practicality of doing things.

Now, we have argued vigorously against certain provisions. I believe it was in the legislation which you mentioned here earlier, one of the other bills, which would have mandatorily required the labeling of any product moving in interstate commerce. We pointed out that this would mean the labeling of such things as hand-operated egg beaters, knife sharpeners in which a knife is drawn through, no power, just drawn through a series of rotating discs, and all of these other things, and pointed out that we couldn't see that this would produce very much of a practical solution to the noise problem.

I think what you are really saying here is that you are making a plea for the Government to consult with industry and arrive at practical approaches. An atmosphere of mutual exploration can lead perhaps to a definition of those things which can be done on a voluntary basis.

Well, I have talked enough here, and it is getting awfully late. We have one last witness. I will ask any of my colleagues if they have a question.

Mr. **MARTIN**: I would like to explore the AESMC static test procedure. You are talking about total vehicle noise.

Mr. **VAN DEMARK**: Well, perhaps there is a slight misnomer there. The static test procedure, of course, would not get the tire noise.

Mr. **MARTIN**: Then how would you really enforce the total vehicle noise? You are talking about inspection and enforcement programs. In the case of trucks going down the highway, tire noise predominates.

Mr. **VAN DEMARK**: I am speaking primarily of passenger cars, and I do admit there is inconsistency there in the wordage, and perhaps I should not have used the term "total vehicle noise". Total vehicle noise does include the dynamic applications of the tires and so forth. That would not be apropos in this case.

Again I am perhaps illustrating the confusion that exists between so-called exhaust system laws, the general statues, and the total vehicle noise. This proposal would be one which would measure exhaust noise primarily, which in many of the legislative jurisdictions is confused with total vehicle noise.

Mr. **MARTIN**: Basically, then, your static test is a muffler test, however you want to look at it.

Mr. **VAN DEMARK**: It wouldn't be restricted exclusively to the muffler, since it would have the engine in an operating speed, and all the accessories noted on the engine would be whirring and making noise at the same time. It would lose the dynamic aspects of a vehicle wind resistance and wind noise and the tire noise.

But our feeling is that this would be a practical, reasonable test that could be used in the various states and in their inspection programs, where a dynamic test brings up problems for many of the state people.

Mr. **DIETRICH**: I would like to ask a question, continuing on about this static test, which I find very interesting, and something that is the subject of some government speculation in the Department of Transportation, as a matter of fact. I have reference to the Bureau of Motor Carrier Safety proposed rule-making on in-cab noise.

Does the static test that you are talking about, would it apply to trucks, for instance?

Mr. **VAN DEMARK**: We are primarily considering it at the moment in relation to passenger cars, and have not expanded our thinking into the truck area. There is a possible application there.

Mr. **DIETRICH**: Well, let me ask you this. Perhaps you could answer this question. Does it include road loads?

Mr. **VAN DEMARK**: No. I will unofficially just make a brief statement of the premature parameters that we are working with in the static tests, and that would be that the vehicle, the passenger car, would be sitting idle. The engine would be operated in idle, in neutral, at 75 percent of its maximum engine-rated speed, and the microphone would be placed approximately 25 feet from the vehicle in line with the point of exhaust discharge, four feet above the ground.

I think those are the basic parameters, without getting into details.

Mr. DIETRICH: So it is basically an unloaded engine operation?

Mr. VAN DEMARK: Yes.

Mr. DIETRICH: I see. Let me go on to the labeling.

You made the comment earlier, very early on when you were explaining your role with respect to the AESMC and what they represent, and you said they make after-market replacement exhaust systems. Could I understand this to include the exhaust pipe and tail pipe as well as the muffler?

Mr. VAN DEMARK: Yes. In my terminology the exhaust system would go from the exhaust manifold, the flange on the engine block, if you will, which would include the exhaust pipe, any intermediate pipe, the muffler itself, the tail pipe, the hanger, the brackets and related hardware, would be the system.

Mr. DIETRICH: Okay. Then let me ask if you are aware that the exhaust pipe itself may very well need to have specific noise performance, and thus would likewise fall to having labeling applied to it?

Mr. VAN DEMARK: Yes, I realize that, and that is the reason we, when we think of ourselves as exhaust system manufacturers, that is why we are concerned.

Mr. DIETRICH: Well, the follow-on to this is question that applies directly to the exhaust pipe as well as the muffling and noise control elements of the system, and that is, you made a point of saying that the replacement systems might very well be better than the original systems, in describing the association, and I just wonder whether you might not before labeling, let's say, of the difference between the performance of the exhaust pipe or muffler, let us say, and your original equipment? Wouldn't you like to see that on the product itself?

Mr. VAN DEMARK: No, I don't think so, because I think that basically is expressed in my concern for the labeling in the fact that there are so many variables involved that it becomes an almost impossible task to do.

Mr. DIETRICH: But I think you just said the particular system is sold by make and model, so if you have something for a Hupmobile 8 I would expect that I could look at the label on it and say this system is for a Hupmobile 8. It would probably be on already, and then it would say it 3 dB quieter than the original manufacturer's system.

Mr. VAN DEMARK: On a Hupmobile 8. But when that same muffler is used on a Tornado 6 it might be 8 decibels different. And when it is used on a Ford 6-cylinder—that is my point. The after-market muffler has many varied applications and many systems.

Mr. DIETRICH: You are saying one muffler might be sold for many applications?

Mr. VAN DEMARK: It usually is, yes.

Mr. DIETRICH: And you might then consider labeling of a form that set some kind of bounds on what it does, that when used on any of the vehicles for which it is recommended it is at least 2 dB better the manufacturer's, or at least better than, or never worse than 3 dB noiser than.

Mr. VAN DEMARK: No, I don't want to get into that bag at all. I would just like to have them labeled the way they are now, with make and model, perhaps with the general statement that they are at least comparable to what was there originally. But I wouldn't want to get into a comparison.

Mr. DIETRICH: Well, now, wait a minute. Comparable to, but you wouldn't want to get into comparison?

Mr. VAN DEMARK: Comparison in absolute figures.

I seem to have confused you or mystified you. The basic reason, and our concern about the labeling, is the economical and practical aspects of it, and that concern is still there, whether the label be a 75-decibel label for the muffler or the label says 3 decibels more than. That concern remains the same, the practical and economical limitations of being able to do this.

Mr. DIETRICH: I see. In other words, you are saying that if someone would tell you what the numbers were, you would have less objection, but having to dig them up and measure them for all these myriad vehicle applications is unnecessarily burdensome.

Mr. VAN DEMARK: That is the major thrust of what I am saying, yes. It would be an impossible task.

Mr. DIETRICH: Then could I, or perhaps some other members of the panel, assume that this is a suggestion, that in fact the acoustic properties of replacement noise control devices are not known, then, to your member companies?

Mr. VAN DEMARK: I didn't mean to say that, but you get into problems. For example, if you label the muffler with either an absolute figure or a relative figure to what was there originally, we are immediately faced with the problem of the system. Was the muffler replaced per se, or was the complete system replaced? Did you put on a muffler and a tail pipe, or a muffler, tail pipe and exhaust pipe. As you yourself have pointed out, these are all contributing factors to the overall sound.

Dr. MEYER: I think I read through this fear which has been raised before that you are fearful of a violation of a warranty requirement. Now, we are exploring this. This point has been raised, but once you stick on here some sort of label required by law, then there is a question, you know, if it doesn't perform that way you are violating some sort of implied warranty.

Mr. VAN DEMARK: No, sir. Let me correct you the other way. There is no fear of that on my part. If the labeling requirement became law and was so labeled by one of our manufacturers it would perform that way. There would be no fear.

Dr. MEYER: Then I guess what your fear is that somebody is going to use it differently from the way in which it was designed. As you said, if it were specifically designed to be used on the high-wheel Hupmobile 8 touring car, circa 1926, and you happen to still be manufacturing them for that, and you took it and stuck it on a Tornado 12, then it would be operating differently than your label. But so what? The label is to indicate what it was to be used for. If somebody takes it and violates the use of it—It ought to be clearly written on the label, "This product, designed for use with such and such, does such and such. Used under other circumstances it does not meet that requirement."

Mr. **Van Demark**: I think the problem that we are getting into— I finally got a handle, I think, on why the confusion exists, and I think I can explain it. I will try to do it very briefly.

The original equipment muffler installed at the vehicle manufacturer's plant, is usually designed for that particular make, model, engine, wheelbase, body style and so forth.

The after-market muffler, which is not only sold to the after-market independent channels but also usually in a vehicle manufacturer's service program, is a compromise model, from the standpoint it is designed to fit many of the applications. It will replace three or four, maybe five or six, original equipment mufflers.

In that aspect, the many variables affecting its performance and its rating and its resultant labeling become rather weighty and imponderable.

Dr. **Meyer**: Well, I guess you have opened up a very disturbing problem here, and as the Chairman I have to explore it, and I will take the responsibility for keeping people here long hours. But what you are saying to me is if we set vehicle standards, the vehicle standard is going to be set on the basis of the reasonable life of the vehicle, and it is going to be applied to a vehicle standard, which is the total road transportation system: motor, tires, mufflers, fans, everything that is on it. It is to be measured in a very precise manner under conditions, hopefully, which approximate the conditions of use—worst conditions of use from an exposure viewpoint because within one year one of the more sensitive parts other than the tires is all corroded and falls off, and we have got to go around to Midas Muffler or some other person, or back to the manufacturer. And one would not have any assurance then that the vehicle would still be in conformance with the standards, and as currently envisioned, the owner of that vehicle is still not liable. The manufacturer of the vehicle would be liable.

Now, what you are telling me, the American National Standards Institute is going to testify tomorrow, and you folks are going to have to get together, so that if these laws are enacted and it seems to me the laws have already been enacted by the states, you are going to have to take this into account, or else it is going to have to be taken into the account of the industry, the need for assuring that the product, when put on a vehicle with manufactured standards, still meets the standards.

Mr. **Van Demark**: Yes. I am sure that I somehow must have led you astray or confused the issue, but that situation that you point out I think exists in California today. They have a total vehicle noise legislation enacted, law enforced, that covers vehicles in use, be they one, two, three, four, ten years old. If that vehicle has a replacement muffler on it it has to meet that standard.

Dr. **Meyer**: That is my point. So I really wonder why we are bidding around on this issue of where the muffler won't work such and such a way if used on another vehicle. I guess I am sort of confused about that.

Anybody else on the panel have any comment?

Mr. BARON: Do you recall when the first voluntary industry muffler code was adopted?

Mr. VAN DEMARK: I don't recall the exact date. I think—and I am guessing here—I think that it had to do with trucks and I think it was 125 sones (?), as I recall.

Mr. BARON: Right. Remember the year?

Mr. VAN DEMARK: It would have to be in the middle '50's, but I can't pin it down exactly.

Mr. BARON: Right, in 1954. Against that we look at a statement that most background technical data today is rudimentary.

Mr. VAN DEMARK: I think that statement was made not in relation to the decibels or the sone limitations, but in relation to the testing procedures. If it didn't clearly point that out, that was the intention of that phraseology.

Mr. BARON: In other words, the technology of making good mufflers is there, the standard for testing is not?

Mr. VAN DEMARK: Oh, yes. Yes. And if I may expand on that point just a bit, earlier in the testimony—and I believe you, Mr. Baron, made the point with the people from California that the technology does exist to do this, but it is just a problem with the measuring and the sites and so forth. And I think we may get involved there in some semantic differences. The technology, where does it begin and where does it end? I would assume that the technology of noise measurement would somehow include the choice of sites and measurements. It would be my view that the technology today is not really one hundred percent existing in the real world to do this job as they intended to do.

Mr. BARON: I am puzzled, because they have been doing it in Europe for some years. You are not acquainted with the European work?

Mr. VAN DEMARK: I am acquainted with the International Standards Organization Noise Measurement Procedures and so forth.

Mr. BARON: Switzerland, again, Germany, Austria have been—

Mr. VAN DEMARK: Most of those have been patterned after the ISO standard, which is very similar, actually, to the parameters we have developed within the automotive exhaust group.

Mr. BARON: Doesn't this suggest to you, or am I being irrational or impatient in saying, that it is taking them a heck of a long time to get these standards, because what we are told is that it is irrational to have a criterion or something like that until we evolve an accepted practice for measurement. Now, why is it taking so long to get the measurement techniques standardized?

Mr. VAN DEMARK: That is a pretty good question, and I don't really know. There are many organizations working with the measurement procedures. For example, the Society of Automotive Engineers, which has the procedure for the measure of vehicle noise, and which is basically the one that has been adopted in California, which has been found, after being adopted in California, not to really get to the root of the problem of noise on the street corner.

Mr. BARON: I think there is a little semantics there. In the testimony I heard I didn't hear them say it didn't get to the root of the problem. They were just trying to get more flexibility, and this I can understand.

Mr. **Van Demark**: I guess that is semantics.

Mr. **Martin**: I might note that in this field of the measurement standards there will be a paper presented in the morning.

Dr. **Meyer**: I think that is important.

Mr. **Baron**: I am merely trying to make a point, and that is a conclusion that comes to me is that the industry is waiting for motivation, because 1954 is a long time away.

Another point, you mention here with reference to no testimony said that automotive noise is potentially dangerous to the human hearing. We have seen in the literature—and I don't recall, I think we had a report in Atlanta—that continuous on motor vehicle traffic can be 85, sometimes more, and in terms of the damage list criterion there is a potential threat to hearing, it seems to me, and in terms of what was raised today by the California report, that the accepted criterion for hearing loss is subject to challenge.

The other point is that there are other effects than even hearing loss. Again under testimony, sleep is interfered with at 45 or 50 dB(A). So this statement is, you know, not quite—

Mr. **Van Demark**: Well, it may be subject to question. I think the statement related to testimony, of course, that I am familiar with. Your testimony in Atlanta I am not familiar with. I am familiar with some testimony that was given to the Senate Subcommittee considering these bills, and I know that in that testimony definite statement were made by responsible authorities in the field, that automotive noise was, of course in their judgment, I assume, not considered to be a health hazard.

Dr. **Meyer**: Well, could I interject this? The law doesn't just deal with health. It says health and welfare, so you know, it is really sort of a moot point.

Mr. **Van Demark**: It is, and my comments didn't say welfare. They said health.

Dr. **Meyer**: It is a moot point, because it is a nice fact be it true, but the law would provide for standards taking into account health and welfare.

Mr. **Van Demark**: I think the only reason that point is made in our testimony is, again, the section of the bill which calls for provisions for labeling, which has the distinct mention of the health hazard involved in the product.

Dr. **Meyer**: But it also says health and welfare. The labeling also says "in the judgment of the administrator which constitutes a hazard to health or human welfare".

Mr. **Baron**: The other point I would like to raise is the one of the cumulative impact of noise. In other words, we are now realizing if a man is working in a noisy factory at 85 or 90 or whatever, is in an environment where he is exposed to 85 or 90, there is a continuation of the danger to his hearing, using the traditional concept, criteria for hearing loss.

But also don't you feel that there should be some consideration given to this concept of environmental protection, that you should not say we will move if there is blood coming out of the ears or prove that there is blood going to come out of the ears? Must we wait for such proof before we move to develop parts which we know are going to be assembled in certain ways, and we know enough to judge more or less accurately what kind of noise will come when you assemble those products?

Mr. **VAN DEMARK**: I think what you are asking me is am I against God, motherhood and country, and I am not.

I am in total agreement with what you said.

Mr. **BARON**: But again I repeat, it was 1954 when the industry adopted a voluntary muffler code, and this is 1971, and everything you say, the industry has moved very slowly. Yet I have read reports, I believe by somebody at Nelson Muffler, that there is a lot of know-how in the field, and there is a question of getting it applied and adopted by the user of the muffler.

Mr. **VAN DEMARK**: That is what our group is attempting to do.

Mr. **BARON**: As far as decibel labeling, I agree with you that the decibel is subject to a lot of questions and a lot of doubts in my own mind about the value of the decibel in certain aspects of the noise problem. However, I would wonder if you don't believe that the decibel, because at least it is a number, you can select your 85 or 83 or what have you, is for temporary purposes a type of measurement that would make sense. In other words, the industrial purchaser, who may not be any more knowledgeable about decibels than the consumer in many cases, I am afraid to say, can purchase by decibel specification. The public can be educated, too, to know they should be cautious about products that are above 85, we will say, or something like that.

Mr. **VAN DEMARK**: I share your concern, and I have to agree that at the moment I don't know of a better way of doing it. We make that recommendation in part from experience not only with consumers but, unfortunately, with many legislators, who are not quite certain what the decibel unit is. That is why we share that concern with you.

Mr. **BARON**: Right. The only difference is I believe we should not do nothing until we develop the perfect labeling system.

Mr. **VAN DEMARK**: I agree.

Dr. **MEYER**: Mr. Hildebrand?

Mr. **HILDEBRAND**: No questions.

Dr. **MEYER**: Sheldon?

Mr. **PLAGER**: I think the panel has addressed itself to most of the points in your paper that I would address. I have one comment I would like to get in the record, Mr. Chairman, and that as regards your earlier colloguy about the labeling thing. I must say I rather favor Mr. Van Demark's recommendation, or perhaps suggestion, that labeling not be excluded from the area of regulation. That is to say, products for which standards are set ought not by definition or automatically not have available also labeling for information to the consumer.

Let me explain very quickly. I must say I can understand Mr. Van Demark's concern about labeling of the various products of a car. I don't think that is feasible, and I certainly share your concern, Mr. Chairman, that we ought not to spend time labeling hand egg beaters. On the other hand, if you have a piece of equipment such as a washing machine, or perhaps even a car, the total system, with standards set by the Federal Government, it seems to me the consumer might very well be interested in knowing whether a Whirlpool has a decibel rating of such and such or a noise rating, whether you use decibels or otherwise, and the GE has something different. I guess I have more faith in the consumer than perhaps has been expressed by some people from time to time. I think consumers are becoming interested in this, and can be educated to be interested in it if we take Dr. Belt's proposal for a public education program seriously, and I think this is something we really ought to look at. It has been happening now in the supermarkets, and the food industry. I think the labeling there has been a tremendous improvement over the kind of fraud, whether intentional or inadvertent, that has been perpetrated on the public, and I think label of noise is certainly not an inappropriate or impractical kind of idea.

On question for you, Mr. Van Demark. I notice in your statement that you cite some seven states in which legislative bills have passed. You then go ahead, however, and discuss the absurdity or at least wide range of tests suggested in the various proposed bills. I agree with you that an awful lot of poor legislation gets introduced, and occasionally some of it does get passed. I wonder if you have any available information in fact on the range of variation among the bills that actually got passed?

Mr. **Van Demark**: I do have it. I don't have it in the form that I can reel it off the top of the head, but I think I did a statement that all of the seven states that have enacted legislation all have a different aspect to them. It might be the decibel limitation or the testing procedure or the application to new or used, and so forth. But they all are different.

Mr. **Plager**: That would probably be inevitable, but the question I am wondering is how different?

Mr. **Van Demark**: I can't give you that off the top of my head.

Dr. **Meyer**: Maybe you can submit it for the record. That would be useful for us to have to compare with some of the other material.

Mr. **Plager**: And may I ask you one question. You say that you call for a uniform Federal standard for vehicle noise, and indicate that you would assume that that would preempt the existing state standard, under Section 6(d) of the proposed act.

The California law, as I understand it—I may be in error—has two levels. One is standards for new vehicles, which presumably would be preempted under 6(d), but I gather they also have an operational standard. Now is it your view that the operational standard, the use and operational standard, would in fact be preempted under 6(d)?

Mr. **Van Demark**: Yes, that would be our feeling. There are within California two separate sections of the vehicle code. One has to do with new vehicles, that is, before the sale, and the other has to do with vehicle is use. This was discussed previously when the California people were here, and I think there was some confusion in that area from the standpoint that the testing procedure is different for both. I think there was some question from the committee to the California people, and that issue I think got a little confused.

Mr. **Plager**: My point is your view is that the operational part of the act and standards dealing with use would also be preempted, even under 6(d)?

Mr. **Van Demark**: You are asking me now my interpretation of 6(d).

Mr. **Plager**: Well, I thought you had stated it here that way. Yes, I am asking you your interpretation.

Mr. **Van Demark**: I think that is right. If 6(d) is intended to cover the operational standpoint, we would favor that as general overall rather than individual states.

Mr. **Plager**: Thank you.

Dr. **Meyer**: One last question, sir, before you leave. Are any of your member companies, either of the Council or Association you represent, producers of the "speed" type mufflers and devices, the ones that deliberately produce noise?

Mr. **Van Demark**: I was going to answer that question until you put that last phrase on there. Yes, I think what you generally allude to is produced by some of our member companies, and I think in the trade are probably known as the high-performance type muffler. They also have the connotation of Glass-Pak type muffler, and so. I must say that they are not produced intentionally from the standpoint of producing more noise. As a matter of fact the Glass-Pak type muffler is as quiet as an original or a regular replacement type muffler originally. It does not have the endurance from a life standpoint. It wears out faster, and when it wears out it becomes more noisy.

Dr. **Meyer**: Very well, sir. We do appreciate your patience, and if we seemed a little brusk at times, we need, as I told the California people, to try to get facts so when the time comes to work together we have a common plane of reference here.

Mr. **Van Demark**: We appreciate that, too, and we would like to work with you in any way possible.

Dr. **Meyer**: We look forward to some further discussions. I think there is some voluntary activity which we can undertake.

One last question?

Mr. **Baron**: No question. Will you be here to the bitter end? I would like to talk to you.

Mr. **Van Demark**: Yes.

Dr. **Meyer**: We have one last public witness, Gary Compton. Are you still here, sir? I know you have been sitting there patiently. It has been a long evening and a long day.

Mr. Compton, we are happy to have you here. I am not quite sure what you are going to talk about, but I am sure it will be of interest to us.

STATEMENT OF GARY COMPTON

Mr. **Compton**: I represent the Northern California Auto Dismantlers Association, the San Francisco Auto Dismantlers Association, the East Palo Alto Auto Dismantlers Association, and the Northen California Tax Payers Council. It's an odd one.

Basically we are all concerned—

Mr. **Plager**: What do they dismantle?

Dr. **Meyer**: They are the ones that get dismantled.

Mr. **Compton**: But the NorCal Tax Payers Council has been working very closely with dismantlers associations to prevent what seems to be a problem facing the nation right now, and that is disposal of their most enormous product. Every year in the United States we sell almost a million cars more than we recycle. Sooner or later we are not going to have to worry about noise or air pollution or anything else because we are not going to be able to drive around. These old junked cars are going to be sitting on the street. So that might be one way of solving the problem.

But back into the dismantling industry itself, we have a serious problem of dismantling this vehicle and reducing it back to reuseable material in a less noisy fashion, because there is no way. We have got an automobile that is sometimes 224 inches in length, with various types of metals that make up this automobile that is no longer needed or wanted, and there are certain things that have to be done to this vehicle to reduce it back to size.

Usually it involves crushers, shredders, hammer mills, things of this nature which all in themselves are extremely noisy.

It poses a fairly sizeable problem to the industry from the standpoint of continuing in business or, in the event of a redevelopment project or change of zoning or relocation, because this noise factor is coming into play more and more. I recently represented a dismantler that tried to relocate in a little town called Madison, California, with a total population of 135. Everything in town is counted in that population figure. He had what they call a car smasher, which is a device with a big lid that comes down and crushes them, and you can hear this thing for about six blocks, and if you are standing within a block of it the ground will shake. This is how much force it has, but it takes big cars and makes them about 18 inches high.

Now, devices such as this, according to other Federal standards, such as the Bureau of Mines, who did a study some time ago on automobile disposal, set this as the criteria for evaluating the efficiency of the operation. Yet when we get back into the noise levels we are creating a problem that has to be dealt with, but by the same token, if we don't perform this function we are creating a even more disastrous problem by having these vehicles lie around.

We have been working with this problem for some time, how to dispose of a vehicle in such a manner that it doesn't create a noise problem and doesn't create a solid waste disposal problem. Quite frankly we have been fairly unsuccessful in reaching a solution that would meet both standards.

This is one of the points that we wanted to raise, and we feel that, along with some of the other problems, that the cities are wanting to legislate out the auto dismantler, either through zoning legislation or other type of maneuvering, through government. They feel if they get rid of the automobile dismantler they get rid of the automobile problem. It doesn't seem very logical to me, but this seems to be government's thinking, and it is a national attitude. Almost every city of the United States. We feel that if the Environmental Protection Agency, which we have worked with in the past on some of these disposal problems, could get with it on the noise problem, and take into consideration some of the other problems, maybe we can work out some solution, through legislative means and possibly through some government subsidizing of research funds, because we feel that there is a greater importance being placed on the dismantler today to modernize and update his system so that he will meet the current criteria, both on a sound level and on a maximum disposal level. We feel that without participation from people like the Environmental Protection Agency and the Council on Environmental Quality that we will not only not be successful in this. We will inadvertently create one of the greatest problems that this country has ever seen. And I think it is just starting to feel this problem.

This is basically what we came here to say.

DR. MEYER: Well, let me say this isn't the first time we have heard this. It was brought up, I believe, in Atlanta. There was some allusion to a loud dismantling operation that was creating a noise problem. And I know the same thing was mentioned in Dallas.

It seems to me you have raised an interesting problem, Mr. Compton, one on which we must indeed work with you. There are a variety of ways, of course: enclosing, shielding, isolating, as well as redesigning the equipment, which very likely may not be the way of doing it, because when you crush something like that or smash it up there is obviously going to be, just by the mere mechanical impact, some energy transfers that are going to produce some soundwaves and acoustical problems.

Let me suggest, in the interest of time, that we get together and discuss this matter with you. I have some people in my office who are qualified in this area. We are also a part of the same agency as the Office of Solid Waste, which is, like my office, part of the Environmental Protection Agency, and it seems to me this is an area we need to explore of the size and shape of the equipment as well as the problem, so we can try to come up with some guidance and help to you.

Mr. COMPTON: This is basically what we have been after. I have made two pilgrimages to Washington myself to try and deal with not only this aspect but other aspects of the problem. San Francisco is currently faced with the possibility of losing its dismantlers and having to deal with 115 cars a day. So it is a problem that is quite urgent, we feel. We feel it has gone too long without a solution, and we are very interested in getting to work on some solution.

Dr. MEYER: I think through some of the efforts that we can jointly work out we may be able to give you some help. Are you going to be in town tomorrow?

Mr. COMPTON: Yes, sir.

Dr. MEYER: It may be that during one of the hectic sessions, but just for a few minutes, I can get together with you, along with a couple of the technical people here, and at least get a little more specific as to some of the possibilities that we might explore.

I think your time was well taken to come, because it opens up an area of responsibility.

I do want to be sure we know to get in touch with you to communicate on this.

This hearing is recessed until 8:00 o'clock tomorrow morning. I thank you all for coming and staying with us.

Whereupon, at 8:50 o'clock p.m., the hearing was adjourned until 8:00 o'clock a.m. of the following day.)

ENVIRONMENTAL PROTECTION AGENCY

PUBLIC HEARING ON STANDARDS AND MEASUREMENTS METHODS, LEGISLATION AND ENFORCEMENT PROBLEMS

WEDNESDAY, SEPT. 29, 1971

The hearing was reconvened, pursuant to recess, at 8:10 a.m., Dr. Alvin F. Meyer, Jr., Director, Office of Noise Abatement and Control, Environmental Protection Agency, presiding as Chairman.

PANEL:

Robert Alexander Baron, Citizens for a Quieter City
Dr. Charles Dietrich, Bolt Beranek & Newman
James L. Hildebrand
Henry Martin, Society of Automotive Engineers
Sheldon Plager, University of Illinois Law School

PROCEEDINGS

Dr. MEYER: I hereby call to order the September 29 morning sitting of the EPA Hearings on noise called for by the Administrator, Mr. William Ruckelshaus, under the authority of Congress and Title IV of The Clean Air Act, Public Law 91-604.

Most of the participants are here. You have already heard the purposes and reasons for this hearing, so I won't bore you with a recitation thereof. And most of you were here yesterday and participated in what I considered to be an outstanding, if lengthy, day of receiving very valuable information for the use of the Agency, the Congress and the Executive branch of the Government.

The panelists are known to most of those of you who are here, so again I will dispense this morning with the introductions and proceed to Messrs. Howe and Young, if they would come forward. These gentlemen represent the Engine Manufacturers' Association which has done a considerable amount of work in the field of environmental testing for noise associated with their various industry associates' products. They have been concerned about noise for some time. So I am sure we will be receiving some very valuable and useful data.

Good morning, gentlemen.

STATEMENT OF THOMAS C. YOUNG, ENGINE MANUFACTURERS ASSOC.

Mr. YOUNG: I am Thomas C. Young, Executive Director of the Engine Manufacturers Association. The Association is located at 111 East Wacker Drive, Chicago, Illinois.

You will find attached a list of the members of this Association; which include major manufacturing companies in the United States producing internal combustion engines, gasoline, diesel and gas turbine types. EMA is, however, concerned only with internal combustion engines for all applications except passenger car and aircraft. The engines of our members are used in truck and bus, off-highway and construction, farm and industrial, stationary, marine, locomotive, lawn and garden, and recreational applications.

We should like to make it quite clear that we are speaking as an Association representing engine manufacturers only, with technical and legal expertise and experience in engine emissions. We do not speak for vehicle manufacturers or construction equipment manufacturers, or any other end use or end product manufacturers or trade associations utilizing the engines covered by our Association. We do feel a responsibility and are quite willing to share our knowledge and information with other associations or with branches of state and federal governments where we can be of assistance.

The Association deals primarily with the development of base line data, the development of test procedures, Model Regulatory Codes and instrumentation, and studies technical and legal aspects of the control of all types of emissions, including noise, from internal combustion engines. We have much experience in the smoke and gaseous emissions area which has demonstrated that even though the preemption clause of the Clean Air Act (Section 209) intends that standards inconsistent with the federal standard would not be set for diesel smoke, several states have, in fact, established inconsistent standards. Thus, we are also concerned with the draftmanship of the preemption clause, and Mr. Jonathan T. Howe, Legal Counsel for EMA, will speak to this aspect and other legal aspects.

Present Conflicts

We have made a summary of state and municipal noise legislation and regulations throughout the United States covering noise standards. This study, as well as the Chicago Urban Study by Bolt, Beranek and Newman, confirm that there is a welter of inconsistent standards being proposed by state and municipal jurisdictions with inadequate research justification. For a manufacturing organization to attempt to provide products to meet this variety of standards would undoubtedly result in significant loss of the benefits of mass production, and would appear to cause significant disruption of interstate commerce. Mr. Howe will explore this more fully.

National Standards

EMA supports the establishment of national standards and federal preemption of noise standards which would preempt existing and future state and municipal legislation and regulations.

We feel this is necessary for the population to have annoying noise levels reduced at a reasonable cost increase in the products they desire. We feel that states should be involved in inspection and enforcement aspects, however, with guidelines outlined by the proposed federal Model Code. We would naturally urge that uniform enforcement procedures and instrumentation are also vital to noise abatement. We would encourage the uniform training of enforcement personnel and the careful selection of sites used for noise enforcement purposes.

Primary Health Standards

We feel that adequate evidence and documentation exists to indicate that some of our citizens have suffered hearing loss due to the impacts of noise beyond their control. We support the establishment of primary health standards. We would point out that the Walsh Healy standards are based on a reasonably uniform manufacturing environment and that a new data base needs to be established for non-continuous noise exposure such as that experienced by bystanders and seasonal employees. We suggest that EPA obtain data on exposure times of non-continuous noise for evaluation prior to establishment of primary health standards, since if the objective is to protect the health of our citizens, the proper level must be established, but also protection from undue exposure time must be considered. We recognize that the use of exposure time in control legislation may create an impossible enforcement situation, but should be thoroughly considered in the criteria stage, prior to standard development. Most existing noise tests measure maximum noise levels even though the noise exposure time at this level to the bystander or operator may be short. We feel that the authority of the Administrator of EPA should be mandatory with respect to establishment of primary health standards.

Secondary or Welfare Standards

It seems to us that the basic premises of establishment of a secondary welfare standard include the following primary factors:

1. The relief of the individual from annoying noise and his general well-being; not his health already protected by the primary health standard.
2. The economic impact of undesirable noise emissions upon such things as property values.

We should like to highlight the fact that cost benefit analysis attempting to relate the trade-offs of increased costs to beneficial effects of reduction of noise levels is almost completely absent in the documentary evidence being proposed as justification for this variety of state standards. It is clear that if the people of the United States do, in fact, want lower noise levels, that they must be willing to pay the increase cost necessary to achieve such levels. We feel that EPA should develop an informative program to inform citizens of the relative magnitude of cost increases required to abate noise emissions from products they purchase. To our knowledge, there has been very little research done to attempt to evaluate the cost trade-offs which may be involved.

Annoyance from a noise emission is due to several factors, not just the particular dB(A) level of the annoying noise source. These factors include:

1. Noise emission level
2. Frequency characteristics
3. The level of the annoying noise in relation to the ambient noise level
4. Control of the individual over the annoying noise source.

We are not expert in the area of psychoacoustics, but we would suggest that EPA should be certain that reduction of noise levels will in fact result in improved satisfaction of our citizens prior to establishment of annoyance standards. We feel more research is required in this area.

Research validates that in any large group of people 10 percent are relatively sensitive to noise, 10 percent are relatively insensitive to noise, and the rest are in the middle. The question arises as to what portion of the population should complain about annoying noises in order to justify establishment of a secondary or welfare standard. It would appear that if only 10 percent complain, these would be the people who would be highly sensitive to noise. Perhaps a broader sample of complaints should be required to justify a welfare standard.

As a case in point, testimony at the EPA regional hearings in Chicago indicated that for the City of Chicago 120 complaints had been received in 1970, approximately 227 complaints in the first six months of 1971, and approximately 240 complaints in the first two weeks of July 1971. Even if we assume that total complaints for the year 1971 were to come to 1,000 to 1,500, the question arises, "Are the complaints of 1,000 people in the City of Chicago sufficient justification to cause cost increases in all of the products purchased by the other five million people living in that area?"

If cost increases are minimal, it would appear prudent to reduce the noise. However, if they are excessive, other considerations may take precedence. The point is, we need to research the cost benefit trade-off prior to establishment of the standard.

In consideration of the above comments, we suggest the following with respect to secondary or welfare standards:

1. We feel that more psychoacoustic research is required to validate the effect of annoying noise sources upon our population and how noise may be controlled to reduce that annoyance.
2. We feel that secondary welfare standards should not be set until at least some estimates are made of the cost benefit trade-offs required, and the public made aware of them.
3. We suggest that the Administrator of the EPA should have discretionary authority to establish welfare standards.
4. There is a serious lack of facilities which can provide scientifically comparable noise measurements and there is also serious lack of laboratory technicians and acoustical engineers. For these reasons, the Administrator should have the authority to determine when standards will be established.
5. Although we recognize the difficulty of considering exposure times in enforcement legislation, we suggest that an adequate data base should be developed on exposure times in development of suitable criteria so that proper secondary or welfare standards can be established which are tech-

nologically feasible and have the proper degree of economic reasonableness. For mobile equipment, more data is required on the effects of multiple sources such as the noise emissions occurring on our highways from a line of traffic.

Labels

We assume that there is a major premise or assmption involved in the concept of application of noise emission labels to the products we purchase. We feel this primary premise is the assumption that people will pay more in order to obtain a quieter product with reduced noise emission levels.

There is some evidence to indicate that this may not be true. For example, people did not elect to pay more for seat belts. In addition, those seat belts, now a standard part of the new automobile are only used by a small fraction of the population. There have been some attempts to sell retrofit pollution kits for used automobiles and people elected, in general, not to purchase these kits, even though the cost was only approximately $20 each installed. Additionally, everyone knows but frequently forgets the fact that people still exceed speed limits established for their own safety.

Consequently, we would like to suggest that necessary research on this basic premise be implemented in order to attempt to confirm that people are, in fact, willing to pay an increased price for the goods they purchase in order to obtain lower noise levels If such research shows that the broad mass of the population was not interested in paying an increase in price for such products, then it appears to us that there would be little need for labeling programs.

We do not feel that labeling is appropriate for engine and component noise emissions. For example, a muffler will provide different noise reduction for different engines of the same horsepower in the same application, so that the technical complexity precludes the use of labels for engines and components. We suggest, for replacement purposes, an approach in which the users are required to select original equipment components or their equivalent with respect to noise emissions.

Research and Development

EMA has been attempting to develop a test procedure for measurement of noise from engines which recognizes the difficulty of developing comparable laboratory facilities by suggesting, as an alternative, the measurement of noise emissions in an outside site away from buildings or trees. This means that noise measurements must be made subject to the vicissitudes of weather. The development of a test code to get comparable results between outside tests and inside acoustically-treated test cells is still in the development phase and has not been technically proven.

In addition, we have commented on the shortage of trained personnel. The majority of these specialists are located in industry with others being in consulting organizations and universities. It appears to us that the maximum usage of these skilled personnel would lead to a consideration of joint research and development by industry and government. If government research is funneled completely through consulting and university organizations, it tends to exclude all of the experience and skills of qualified technical personnel in industry.

EMA has been active in noise activities with its Noise Standards Committee for approximately three years. You will find appended to this testimony some documents we feel may be of help to you in development of your data for the Title IV Clean Air Report and in further work to control and abate noise in our society. These documents include:

1. Weigh Station Test Procedure
   This is a test procedure which proposes establishing noise measurement or truck weighing stations located throughout several of our states. This test procedure would provide an easy means to obtain base line data from existing vehicle populations and, in many cases, being located in rural environments, would provide a proper site for noise measurement at relatively minimal investment. EMA has defined the general approach to this procedure but research is needed to validate that the test procedure is a viable one, and technically correct.
2. EMA Engine Noise Measurement Recommended Practice
   EMA has developed a test procedure for the measurement of noise from a bare engine to be used exclusively for engine noise emissions, not for application of the engines in a vehicle or other components. The corporate members of the EMA are at the present time involved in actual test work to validate this test procedure. In addition, the Society of Automotive Engineers is also involved in development of a similar test procedure.
3. Summary of State and Municipal Noise Legislation
   You will also find attached a recent summary prepared by the Engine Manufacturers Association of state and municipal noise legislation and regulations.

We would like to suggest that we feel additional research is required in the following areas:

1. We feel more data is needed on exposure times for noise emissions, particularly in urban areas. Here again the problem of urban enforcement with surrounding buildings probably needs additional research, as well as control of multiple source mobile noise emissions.
2. There is need for development of an improved and simplified enforcement test procedure which can be scientifically correlated with existing and more complex test procedures.
3. There is also need for a simplified instrument for use by enforcement officers, which again should be validated with more exotic equipment now used for noise measurement.

Other Recommendations

We feel some other points are appropriate, as follows:

1. We support the restriction against removal of noise control devices or components by users.
2. We feel standards applicable to used equipment should be less stringent than, or the same as, the standard applied to the vehicle or application when new.
3. We suggest that you modify the term "noise durability factor" to "noise deterioration factor." This is due to the

fact that in the engine industry the word "durability" has special meanings beyond the purposes for which it is being used in this instance.

The Engine Manufacturers Association deeply appreciates this opportunity to present its views. The Association is ready to provide its services to other trade associations or the Federal Government in any way that will aid in proper control and abatement of noise emission under conditions of reasonable cost acceptable to the general public. We will be pleased to try to answer any questions you may have.

Dr. **Meyer**: I think it would probably be better if we went ahead with Mr. Howe's statement, and then the panel and myself can direct questions to the two of you.

STATEMENT OF JONATHAN HOWE, LEGAL COUNSEL OF THE ENGINE MANUFACTURERS ASSOCIATION

Mr. **Howe**: My name is Jonathan T. Howe. I am a lawyer with the law firm of Jenner & Block, 135 South La Salle Street, Chicago, Illinois. I appear today as legal counsel to the Engine Manufacturers Association. In my capacity as legal counsel to EMA, I have devoted much of my professional time to the myriad of problems surrounding the effective legal control of air pollution, noise and of the environment. EMA has been called upon to give technical and legal assistance to over a third of the states considering laws and regulations applicable to control of emissions from internal combustion engines.

Introduction—Basic Precepts

In preparing this testimony for today, I thought it might be of some value to you to trace the development of the law insofar as it related to attempts to control noise. When we use the term "noise," we should know at the outset that we are talking about unwanted sound which is in itself a subjective definition. What may be aesthetically pleasing to one's ear may not be aesthetically pleasing to another. Thus, a Brahm's lullaby played at a low volume may be essentially pleasing to a baby, but at a higher volume, it may be "noise" and disturbing to one's sleep. A typical judicial definition of "noise" is (*Landry v. Daley*, 290 F. Supp. 968-970 (N.D. Ill. 1968):

> "Noise includes loud, confused or senseless shouting, sound, or a sound that lacks agreeable musical quality or is noticeably loud, harsh or discordant, any sound that is undesired or that interferes with something to which one is listening, or unpleasing sound."

This, too, is a very subjective definition.

The effects, problems and legal attempts to control noise go back to antiquity. One needs only to consider the Biblical reference to the ability of Joshua to bring down the walls of Jericho. In classical times, the Romans enacted perhaps the first prohibitory noise laws. By popular decree, chariot movements during the night in the streets of Rome were prohibited.

Under English common law (which is the foundation of our legal system) the first reported court decision is dated in the thirteenth century. Ever since then, under common law, excessive and repeated noise was recognized as a common law "nuisance", and when the "nuisance" was substantial, the courts would award damages and an injunction prohibiting the furtherance or continuation of noise. Failure to heed the injunction would subject the defendant to contempt of court charges.

The Constitution of the United States establishes the first noise law for this country. In the Preamble to the Constitution, one of the stated purposes and objectives is to "assure domestic tranquility." Tranquility is considered to mean the status of being "quiet" or "quietness." The Constitutional grant to Congress of the right to regulate interstate and foreign commerce under Article I, Section 8, would permit federal regulation of noise. Interestingly enough, it is arguable, under the common law precepts, that the right of peaceful habitation is superior to the right of an unfettered commerce. These guarantees are found also in the Fifth, Ninth and Fourteenth Amendments to the Constitution. The Fifth and Fourteenth Amendments protect against conduct such as trespass or noise invasion or unwarranted governmental action depriving a person of due process or the equal protection of the laws. The Ninth Amendment reserves to the people all undelegated powers and, as related to noise, it preserves state, local and private rights to regulate noise, unless Congress specifically acts to preempt the authority of the states in certain of these areas. Therefore, Congress, in legally controlling noise under the Commerce Clause, must do so in such a way so as to avoid unreasonably depriving persons of the benefit of a peaceful home from without. However, the realistic approach must be one of balancing the value of the noise producer to the need for quietude.

Technological advance has always been ahead of legal controls placed upon that technology. Between the extremes of an unfettered technology and an overbearing restrictive policy, laws must strike a balance—a balance which allows technological advancement, but one which gives adequate consideration to its consequences tempered by a "deeper concern for the interaction between man's tools and the human environment in which they do their work." [House Comm. on Science and Astronautics, *Technology: Process of Assessment and Choice*, Report of the National Academy of Sciences 2 (July 1969)].

In the legal treatment of noise, there have been two basic approaches—common law and statutory or regulatory. Under the common law, two basic theories have developed in addition to the nuisance approach. These are the so-called "inverse condemnation" and "direct physical injury" concepts.

Statutes and regulations have been of two types—a subjective standard resulting from the codification of the "nuisance" approach of the common law, and an objective or quantitative standard establishing specific sound levels in terms of dB(A) measured by certain specific methods.

COMMON LAW

Nuisance

An action founded upon alegations that noise is a nuisance which should be enjoined is a basic remedy available to anyone who has or will suffer damage as a proximate result of the noise.

Because this is subjective, each case must be considered on its own merits.

The courts have been asked in noise nuisance cases to reconcile the conflicting interests of two property owners—one who wants to enjoy his without annoyance and the other who wants to use his for whatever he wants. Here, to, the courts have attempted to strike a balance. One writer has noted that two major principles have evolved: [Spater, *Noise and the Law*, 63 Mich. L. Rev. 1373, 1375 (1965)]:

> "First, each person must put up with a certain amount of annoyance, inconvenience and interference."
>
> "Second, in determining the amount of annoyance, inconvenience and interference that must be tolerated, the gravity of the harm to the complainant should be weighed against the utility of the conduct of his troublesome neighbor."

Judges sometimes try to maintain a balance between the rights of individuals and the rights of society in general. [See *Thornberg v. Port of Portland*, 376 P.2d 100 (Ore. 1962). It should also be noted that most of the courts have also recognized that moderation and toleration will help. For example, the court in *Firth v. Scherzberg*, 366 P. 433, 77 A.2d 443 (1951), overturned the decision of the trial court that the operation of unimproved land for a tractor-trailer truck terminal was not a nuisance per se. The operation of the terminal was held by the Pennsylvania Supreme Court to be a nuisance only at night from 8:00 p.m. to 7:00 a.m. and was so enjoined. In its opinion, the Court stated that the legal test should be as follows: (77 A.2d at 445-46):

> "Noise which constitutes an annoyance to a person of ordinary sensibility to sound, so as to materially interfere with the ordinary comfort of life and to impair the reasonable enjoyment of his habitation to him, is a nuisance."

The court specifically held that the operation of the terminal during the day was proper because at that hour the social good required from the operation of the terminal was greater than the slight annoyance that might result to the people living in the area. To a similar effect on similar facts was the decision of the Connecticut Supreme Court in *O'Neill v. Carolina Freight* Carriers Corp., 244 A.2d 372 (Conn. 1968); and of the Massachusetts Supreme Judicial Court in *Malm v. Dubrey*, 88 N.E. 2d 900 (Mass. 1949).

Isolated incidences of noise should not be actionable or prohibited. In *Hobson v. Walker*, 41 So. 2d 789, (App. Ct. La. 1949), an action was brought to enjoin the operation of a retail fish bait business because of the noise incident to the business. The court denied the injunction because the excessive noises complained of were "isolated incidents and in no sense of the word were of frequent recurrence." Furthermore, the court noted (41 S2d at 794):

> "The honking of automobile horns, the playing of radios and passing or parked cars, the lumbering noise of logging trucks, the puffing and whistling of railway locomotives, the clanging of tire tools and the myriad of other similar disturbances which are established by the record as occurring in the specific neighborhood and vicinity are only those noises and sounds which

> are a part of our times, which are concomitants of progress and which, in a sense, make up some of the slight penalties which we pay as a part of the price of that progress and advancement."

These decisions considering noise as a nuisance should provide to us some valuable lessons, though it is clear this remedy is not enough to cure the overall problem of undue noise. They show that people are generally concerned only with unnecessary or excessive noise in certain activities. They are not concerned primarily with those noises which we must as a matter of course put up with.

The comments made by Mr. Young as to primary and secondary goals fit this judicial pattern. We must, from a legal point of view as well as from a practical one, balance the benefits of technology with the environmental necessities and priorities. [See *Tortorella v. Traiser & Co.,* 188 N.E. 254 (Sup. J.Ct. Mass. 1933)].

Inverse Condemnation

A relatively new approach taken by the court, absent a statute, has been the legal theory of "inverse condemnation." This is a limited remedy based on the concept that a person's real property rights are being adversely affected by some governmental body and therefore are "taken" without compensation, even though no formal exercise of the power of eminent domain has been attempted by the taking agency.

In *Thornberg v. Port of Portland,* 376 P.2d 100 (Sup. Ct. Ore. 1962) an action was brought by property owners against the owner and operator of the Portland Airport. The court upheld the right of a landowner to recover damages resulting from a lessening of the value of his property from excessive noise or to deprive the landowner of useful possession.

This remedy is, as noted, limited to (1) a governmental body as the defendant, (2) substantial damage to real property, (3) measurable damages, (4) caused by the "taking." [See *Lombardy v. Peter Kiewit Sons Co.,* 266 C.A.2d 599, 72 Cal. Rpt. 240 (Ct. App. 2d 1968) (denying relief where only personal injury, as opposed to damage to real property, is alleged); *Martin v. Port of Seattle,* 381 P.2d 540 (Sup. Ct. Wash. 1964) (holding property owners had stated a cause of action against an airport authority in pleading interference with the use and enjoyment of their land, with a subsequent decline in market value, resulting from jet aircraft noise)].

Thus, this remedy is not adequate to solve the problem.

Physical Damage

The last of the common law approaches is that of physical damage, which is very similar to the nuisance concept. A unique decision in this area held that the loss of chinchillas solely from noise emanating from a speed-car race track adjoining the property of the plaintiff was sufficient to posit liability. *Kohn v. Weber,* 402 Pa 63, 166 A.2d (1960). The defendant, having been given notice, negligently went ahead to permit the excessive noise to continue. As a proximate cause of this, the plaintiff lost his chinchillas.

Summary.

As these representative cases show, common law remedies are not an answer, because in each situation the case must be decided on its own merits. They require judicial action which in turn requires expense and incurs delay. However, the lessons learned and the balancing approach should not be discarded, rather, improved upon in the statutory approach.

Statutory and regulatory

In the area of motor vehicle noise, every state except Alaska regulates noise emissions either directly or indirectly. The Department of Commerce's Panel on Noise Abatement completed a study in 1969 which examined state and local ordinances concerned with noise control. The study notes that vehicular noise control in 32 states is limited to muffler requirements. In 17 states and the District of Columbia the basis of noise control is the subjective "disturbing the peace," with some objectivity occasionally interspersed with specific noise standards. Only three states in 1969 had specific standards, with regulations, that imposed criminal penalties for noise measured at prescribed distances from the noise source. (See Cong. Rec. Vol. 115, No. 24,32178-32259, Oct. 29, 1969).

California, for example, measures vehicle noise at 50 feet from the center of the lane of travel at specified speeds and vehicle weight. (See Calif. Vehicle Code Section 23130.)

Since 1969, however, many states, in response to the awakening of interest by the electorate in the environment, have been proposing new laws and regulations. Practically none of the states are taking a subjective view; rather, laws are being based on quantitative, objective standards. However, there is a serious problem arising in the variance from state to state of the standard to be enforced and the methods of enforcement.

EMA SUGGESTIONS

Balance Standard

As the cases discussed so clearly indicated, there is a need to balance the concerns for the environment with the benefits of technology. We, therefore, strongly urge the promulgation of fair and equitable standards, with technological and economic feasibility being a major factor to be considered on an increasing basis as the health or medical danger decreases.

Pre-emption

A review of proposed state noise regulations would clearly demonstrate the myriad of difficulties that are now going to be experienced in attempting to bring some order out of the chaos and the cacophony of proposals to regulate noise. For example, in some states using dB(A) readings, at 50 feet, are anywhere from a low of 74 to a high of 90. The state of Connecticut is considering standards based on 25 foot limits. We would be happy to provide a summary of pending bills to this panel.

The Engine Manufacturers Association recognizes the need for the effective legal control of noise emissions. Standards and laws which are easy to understand are easy to enforce. Uniform standards and enforcement procedures help to insure compliance, and in particular insofar as engines manufacturers are concerned (or anyone who mass produces his products) uniform standards are a necessity.

Uniform enforcement procedures in the noise area, because of varying methods, should necessarily be established to insure compliance with the uniform noise standards.

We, therefore, most assuredly support uniform federal standards, with federal pre-emption. Also, because of variances in testing methods, we would respectfully submit that a national uniform enforcement policy or procedures be established under the aegis of the Environmental Protection Agency giving the responsibility of enforcement to the state and local governments who adopt responsible plans in accordance with the uniform procedures.

There are several reasons for this. Most manufacturers of internal combustion engines use mass production techniques which result in the economic production of high quality engines. Engines which may have several applications are produced on the same assembly line, resulting in further economies. The great value of being able to continue to use mass production and assembly line methods which will assure the continuation of the growth of this nation and the economic production of engines might be lost if each state and local authority is permitted to establish standards which are not uniform.

The immediate needs of the nation could be met more effectively by having one agency charged with the responsibility for the establishment of noise standards. Having a single agency responsible is particularly helpful when one considers the critical shortage of qualified technical experts in the area of noise technology. With single agency responsibility costs effectiveness would be improved and standards can be established more quickly than if this tremendously complex task is left to a multitude of agencies.

Furthermore, because of the high mobility of engines and products using internal combustion engines, states and their political subdivisions cannot effectively solve noise emission problems by regulating those products and engines which are initially registered in that state. Conflicting requirements among various states or localities attempting to regulate noise might well result in confusion and, rather than helping to control the problem, lead to further delays and difficulties in the implementation of effective and realistic noise standards and enforcement procedures.

A thorough understanding of any law is always essential for its effective enforcement. A myriad of noise standards which seemingly may result would not only be near impossible for the public to understand, but would also be difficult for industry to respond to and comply with.

In the opinion of the Engine Manufacturers Association, uniform standards and test procedures could be established best by the Federal Government, as is clearly demonstrated with the present situation under the Air Quality Act as amended. Certainly the same rationale that led to the enactment of Section 209 (formerly 208) in 1967 should impel the Federal Government to continue to be the sole standard-setting body for the control of noise emissions, and it should establish uniform enforcement procedures from any additional products or engines.

The Engine is Only a Part

As those who are much more qualified have noted, the engine is but one factor to be considered in the total amount of noise which may be emitted by any given noise source. However, any noise standards which are set or enforcement procedures which are established for end products which include engines must also have uniform standards and enforcement procedures as suggested earlier. This, we know, will make regulation of noise more difficult, but we must be willing to accept that challenge and responsibility.

CONCLUSION

I appreciate your permitting me to speak to you today. Again, let me emphasize that the Engine Manufacturers Association stands ready to meet with you and to assist you in any way possible to prevent the noise of our environment from having the effect of Joshua's horn on our future. With reasonable and enlightened standards and procedures, we can enjoy both quiet and technological advancement.

Thank you.

Dr. **Meyer**: Well, thank you very much. These two papers certainly provide a very illuminating insight, both to the problem and also the depth of attention which you all have given this problem.

Since it deals a great deal with law and regulation, I will start off on my right. Any questions, my end man down there?

Dr. **Plager**: No, I don't have any questions. I am kidding.

Mr. **Howe**: I would have been sorely disappointed if you didn't.

Dr. **Meyer**: I think the audience would have, too.

Dr. **Plager**: I commend you, Mr. Howe, for, I think, a carefully prepared and scholarly—if I may use that in its best sense—statement of some of the legal issues here. And Jenner & Block is a firm with which I am familiar and have some fine acquaintances up there.

Both you and Mr. Young, let me get right to the heart of what I think is an important issue that the Federal Government has to look at and, indeed, is looking at in terms of the whole process of standard setting and enforcement of the National Noise Abatement Program: this preemption issue.

You probably heard me already on this in previous days' discussions here. Let me make it abundantly clear, both to you and to the record, that I do not have an absolutist position on this, and part of what does bother me is handling this problem in a clear black-and-white manner as if there's only one answer, as if there's only one possible alternative that makes any sense. It seems to me that that's too simplistic. Let me see if I can approach this with some specific questions to you.

Both Mr. Howe—both you and Mr. Young called for federal preemption of standard setting. Now let me see what you mean by that. Do you mean that that should be—should apply to all products moving in interstate commerce? For example, are you speaking of only about engines and automotive products or are you also speaking on behalf, for example, of the National Association for Hand-Held Egg Beaters? That is to say, did—Did you really intend to call for that a blanket preemption concept as it applies to all products, regardless of the nature, quality or use?

Mr. Howe: I don't think you can do that. You are absolutely correct. This is not a black-and-white area. We do think that with the situation that we are experiencing with engines—and we can speak from the standpoint of our expertise in the area of engines and end products which use engines—we think that from that standpoint that preemption, for the reasons outlined in our papers, is not only necessary but it's just got to happen.

Dr. Plager: Well, let me come to that.

Mr. Howe: But as to your egg beater situation, I don't think that we can make any rational decision as to that specific problem.

Dr. Plager: Fine. Let me look at another dimension of it with you. Would you also call for preemption even in the engine industry in the absence of any federal standards? That is to say, it seems to me you are saying—and I think responsibly—that there is a serious noise problem. I am glad to see that you are not making the kind of statement we heard yesterday, that in the absence of clear evidence that the people are dying from noise there ought to be no response to it? That's over-stating what the gentleman was asking for. I think he did limit his statement to the labeling requirements. I take it you are saying there is a noise problem. The engine manufacturers want to participate in the establishment of reasonable standards.

Let's hypothesize for the moment that the Federal Government chooses, for any reason, though, not to establish any standards whatsoever. Would you call for federal preemption; that is, a complete preclusion of any state standards under those circumstances?

Mr. Howe: I can't see how any responsible organization can call for the total lack of any standards in this area. I think it's—Again, I think it would be a requirement here that, for preemption to exist, there must be a federal standard which has been established. Our concept here is that preemption would establish a federal standard with uniform enforcement procedures which would be used by the states in enforcing that standard. Absent action by the Federal Government, then I feel that the states have a responsibility to act on behalf of their citizenry to promulgate standards applicable to all types of noise sources.

Dr. Plager: Fine. And presumably, if that should come to pass, that could happen one of two ways. The state could act in a coordinated and more or less uniform way. We do have some precendents in the legal system for uniform laws—

Mr. Howe: Sure.

Dr. Plager:—and uniform practices, or they could end up acting in a whole variety of ways, causing the kind of confusion and cacophony that you referred to. And I would propose that in the latter instance you would hope that the Federal Government or somebody would take some action to deal with that kind of confusing problem, because it would be disadvantageous both to the general public and the industry. Is that a fair statement?

Mr. Howe: That certainly is, and we certainly wouldn't be here speaking to the issues that that panel is considering if we did not feel that the Federal Government should act in this area responsibly.

Dr. Plager: Is it fair, then, to say that your concern could perhaps be stated in terms of a concern that there be reasonable standards; that these be understandable and reasonably enforceable, and that they be standards which can be, if at all possible, uniform, or at least consistent throughout the nation so that the engine manufacturers are not unduly handicapped? Is that a fair statement?

Mr. Howe: That's a fair statement.

Let me give you an example of what we are confronted with today in another area of environmental protection. That's the area of smoke emissions. The federal standard establishes very simplified, a 20 percent opacity standard. That's a precise scientifically measurable type of approach to the problem.

However, the state—some of the states have gone and have adopted standards which are not consistent with that 20 percent opacity standard by referring to such things as Rinkelman charts which are based upon an entirely different type of scientific approach to the problem, which lack a great deal of scientific, we think, value. And we would like, obviously, to see a more precise standard like the 20 percent standard enforced uniformly throughout the United States, because it will have a better effect of doing the job that is to be done for the environment from the standpoint of air pollution. And we feel that our concern here with noise is that, if we have a uniform standard and we have uniform methods of enforcement, we are going to do much better in solving the problem of noise than we are if we have 50 different little standards and 50 different little methods of enforcing them.

Dr. Plager: Would it be fair, then, Mr. Howe, to summarize your position by saying that what you are really calling for is federal action as far as this preemption issue goes, federal action to insure that when there is a real problem in inconsistent standards, in inconsistent test measurements, in inconsistent procedures, that the Federal Government exercise its advisory power over interstate commerce and over the general welfare to insure that that problem is dealt with?

In other words, what I am trying to see is whether we are really—is whether the issue is really as far apart as some people make it sound.

Mr. Howe: I don't think it is that far apart. I think the desire certainly of this panel in making its recommendations is to come up with a realistic, sound approach to handling the problems of noise in our environment.

Dr. Plager: And handling the problems of what I think we sometimes used to call "creative federalism." There is a real question there—

Mr. Howe: That's correct.

Dr. Plager:—as to what the relationship should be between the states and the Federal Government.

Mr. Howe: We have—In the area we have many precedents, obviously, for preemption. We are not talking about preemption in the sense of the National Labor Relations Act, let us say. We are talking about preemption from the standpoint of being a device by which proper and adequate enforcement and proper and reasonable standards uniformly can be established throughout the United States. That's what we are talking about.

Dr. **Plager**: So that perhaps in those industries and/or those areas where there is no real problem with uniformity or there is no factual difficulty here, then the call for federal preemption may be unnecessary?

Mr. **Howe**: I would think so. But I can't say it would be a position of our Association because we are not to talk to those items but our own items here.

Dr. **Plager**: Certainly your industry and the auto—the whole transportation industry is clearly a problem of national—

Mr. **Howe**: That's correct.

Dr. **Plager**:—interaction and national relationships, and has to be dealt with.

Mr. **Howe**: Yes.

Dr. **Plager**: Let us move, then, quickly, if I may, with you. Have you had a chance to look at Section 6(d) of the proposed Act?

Mr. **Howe**: I have it before me.

Dr. **Plager**: I am a little bothered—and I think the record perhaps could benefit from your views—on whether you think Section 6(d) is an adequate resolution of this problem of preemption.

Mr. **Howe**: Well, for the benefit of the record, let me read what 6(d) provides.

Mr. **Plager**: All right.

> Mr. **Howe**: "No state or subdivision thereof shall adopt or enforce with respect to any product for which noise generation standards have been prescribed by the Administrator under Subsection (a) of this Section, any standard limiting noise generation characteristics different from the standards prescribed by the Administrator.
>
> "Nothing in this section shall diminish or enhance the right of any state or subdivision thereof otherwise to control, regulate or restrict the use, operation or movement of such products."

What we are really talking about is a two-fold step in this thing. At least it's my feeling. We are talking about, first, the establishment of uniform standards of manufacturer for noise characteristics, when prescribed, which would be subject to regulation by the Administrator under this Act which deals primarily with interstate commerce engines, and that's it—that no state can adopt any type of standard inconsistent with the federal standard. In other words, an identical standard similar to what we have with the Motor Vehicle Safety Act and the preemptive aspect of that.

The second part of the preemption clause here provides that the states may continue to regulate application. For example, we go to this truck terminal case in which the court found that it was not a nuisance to operate the truck terminal situation during the daylight hours, but at nighttime hours it would be proper to enjoin it as being a nuisance.

This is an application restriction. We think that states could probably, under this type of procedure set forth in the preemptive clause here, be able to continue to do that type of thing. But they would not be able to say that we are going to ban from our roads any vehicle.

Let's assume that the Federal Government sets a standard of X and we are going to ban from our roads any motor vehicles unless they meet a standard of Y. That clearly would be preempted. They could only ban those which would not meet the standard of X.

Dr. Plager: How about if they said, "We will ban from the use on our roads any vehicle that does not meet the standard of Y between the hours of 6:00 in the afternoon and 9:00 the next morning?

Mr. Howe: I think you begin to get close to a very serious problem which we have with this particular clause. That is application.

Dr. Plager: Yes.

Mr. Howe: And the question would be: Would it be reasonable, I think, for construction purposes here? Would this be a reasonable restriction for the state to impose?

Dr. Plager: But you would say—

Dr. Meyer: Would the gentleman yield a minute? I would like to interject a thought here.

There are several ways that you can get at use restriction. You can get at it not only with the vehicle itself, or the source, but you can also say that within certain prescribed limits, zones—you could say in those areas, as an example, in which speed limits are 35 miles an hour between the hours of 6:00 a.m. or 6:00 p.m. and 6:00 a.m. the residual noise level shall not exceed a certain decibel rating measured on the A scale. That's not only directed at the truck, but that's directed at all sources of noise, and it simply says that that's the permissible residual or the secondary level. And if you have a truck that emits more noise than that, you can't operate it. Sorry about that.

But also, if you have a lawn mower, you can't—

Mr. Howe: For example, in the city of Chicago they have restrictions placed upon the movements of semi-trailers. You cannot bring a semi-trailer into the Loop area of Chicago during the business hours. I think it's from about 7:00 in the morning until 7:00 at night. But any hours after that, you can bring it in.

Obviously the reason for this restriction is to prevent huge traffic tie-ups, and there are variances permitted, but this is what I think Dr. Meyer is talking about too, and what we are talking about.

Dr. Plager: You see, in the area of noise, you cannot—Well, you can describe the noise package one of two ways. You can say "no semis," and everybody knows what a semi is by looking at it. You can also say "no noisy truck," but no one knows what that means. And we have been trying to move away from that, and the technique now is to come up with quantitative standards.

And I guess what I am trying to reach is your view of a quantitative standard relating to the use of the vehicle. That is, is it feasible under 6(d), and as your industry sees the problem, for a state, for local government, to say, "Okay, the Federal Noise Generation Standard is X."

Fine. We have nothing to say about that.

"However, on our highways in our city, no vehicle may be used with a noise generation of Y during the hours of 9:00 to 9:00, 9:00 in the evening to 9:00 in the morning."

And this is aimed at trying to reach—to use Dr. Meyer's standard—a total residual of Z, you know.

Mr. HOWE: I think that certainly under 6(d) this would be permitted.

Dr. PLAGER: What do you think the impact of that would be on the engine manufacturers or the vehicle manufacturers? Would they have to—

Mr. HOWE: I don't think it would have any impact upon the manufacturers. It would have more of an impact upon the user.

Dr. PLAGER: Would the user be likely, then, to come to the manufacturer and say, "Hey, three of my most—three of the states where I am most operating have come up with this use level of Z. I need a truck that will meet that level."

Mr. HOWE: Well, I think that we have gotten, I think, a little bit down into our hypothetical example here of imposing a statewide type of noise standard, as you have done. We know that, for example, on some super highways that we are going to probably permit a louder noise to be emitted because of speed and everything else than we are on a residential street. So in the concept of what would a state responsibly do, I think that a responsible state would probably restrict the application of a use standard to those areas where it is required for the health of the people in that community.

Now let's assume for a minute that they do go to the situation that you have described. The user comes to the manufacturer and says, "I got to have a truck to do this," or whatever it might be. The manufacturer is either going to respond, "Well, yes, we can do it," or he will say, "No, that's technologically impossible."

Dr. PLAGER: In which case you will just have to stay out between—

Mr. HOWE: Between 9:00 and 9:00.

Dr. PLAGER: Fine. I think that's been helpful.

Let me ask Mr. Young a question. Mr. Young, do I take it that you are, in effect, proposing that the standards which would be relevant to the Engine Manufacturers Association members would parallel in concept the Clean Air Standards of 1970?

You made references to primary and secondary standards. Are you suggesting a parallel kind of scheme?

Mr. YOUNG: I think that's a helpful distinction, and my assumption is that—although I am not a noise acoustician; I am an engineer, but I am not a noise expert. My assumption is that technically there is some rather clear—or much clearer, let us say, ability to define a noise health limit. The Walsh-Healey Act. In other aspects there's data from the medical side and from the psychological side to address that question, and I think that's implicit in the idea of separating them; that it is possible to draw some—at least ban. We say, if it is above this, you are definitely in the health area, and below this you are in the secondary or welfare area. If that is, in fact, validated by the appropriate technical people that that can be done, then I think it's extremely helpful to carry the concept into the legislation of a primary and a secondary standard.

Dr. PLAGER: Did you hear the testimony, by any chance, of Dr. Belt yesterday about the psychological levels, the three levels of auditory—

Mr. YOUNG: Yes, I did. And I commented that I think you need more research in this area for some of the standards, which you wil see in the testimony we provided as the summary of state legislation. Some standards are being set without any real due consideration of this, and there are lots of things probably technologically feasible. But immediately you get into what kind of increases the public is going to have to stand, and nobody really knows what these are.

When you attempt to take a device and make it more quiet, you must apply more engineering. You must apply more parts, more materials, more components. And therefore you tend to get increased costs, and no one knows whether, if the product were made that quiet, it would be bought.

For example, one of the engine manufacturers 10 years ago offered a quiet engine and no one bought it, and they discontinued it.

Now, there's no point in setting a standard that would require, you know, something of that sort. That would be a waste of economic good to the country. And it's also helpful in priorities as well.

Dr. PLAGER: Just one final, quick question. That is that you called several times in your statement, and you referred to paying the cost, that most people don't want to pay the cost. You know, then we ought not to do things. And you said something about a reasonable cost acceptable to the public. How would you suggest we determine what costs are acceptable to the public as a prelude to undertaking regulation here?

Mr. YOUNG: I don't know, but I think there is. Certainly a cost benefit is an exact science, as is economic forecasting. But this is not to say that it ought not to be attempted. I think that it can provide insights.

What I am attempting to say is that when you get into the area of noise standards, unless research clearly shows, you know, that we are physically affected by very high frequency noises, or some other way—and I am not sure that research has demonstrated this yet—what is the purpose of setting the standard, you know? And I think that really there needs to be considerable research on this cost benefit analysis. But certainly all of the data that has been addressed to that problem ought to be pulled together, and it seems as though there have been—

As you know, there was a quiet compressor made. There has been testimony about that. I think that there needs to be pulled together all the cost data in an attempt to generalize some kind of cost-decibel relationship, if that can be done. And I think that then, if that can be done, a test could be established to get some feedback from a sample of the general public as to whether or not they would pay that much more for costs, or what portion of the public might pay more.

I am not skilled in that area. I can't really answer that.

Dr. Plager: Mr. Chairman, could we get copies of Mr. Howe's statement?

Mr. Howe: Copies have been provided.

Dr. Meyer: I am sorry, I thought the panelists did have them, Shel.

If any of the panelists have additional questions, perhaps you might send them to the witnesses through our office in Washington. Because today we have a real need to close this off by not later than 5:30 today, because some of us have got to go to Denver to participate in another hearing.

Mr. Howe: If it was your desire that we come back and testify in Washington or somewhere else, we would be happy to do that.

Dr. Meyer: As a matter of fact, right now I was going to say, because of the nature of the Washington hearing, I would like very much to extend to you an invitation, because of the depth that you have gone into some of this, to appear at Washington also.

Mr. Howe: We would be very happy to.

Dr. Meyer: Fine. Mr. Hildebrand, do you have questions?

Mr. Hildebrand: Yes. Having worked in this area, I also would like to compliment Mr. Howe on his presentation, which I feel is an excellent summary of not only the development of law, noise law in the United States, but also an excellent summary of some of the rather complicated cases in this area.

Mr. Howe: Thank you very much.

Mr. Hildebrand: You stated that the common law approach was inappropriate because of its case-by-case approach and its inherent—I would agree with you, with the exception that I think the common law approach has played an instrumental role in stimulating legislative regulations.

Mr. Howe: I think we gained much, and the purpose of going through the common law cases is to provide guidance, which I think is invaluable for the regulatory aspect and the statutory aspect.

Mr. Hildebrand: And turning again to preemption, would you be opposed to the basic proposition, which you seem to be opposed to, that a local community should be permitted to establish its own standards more stringent than the Federal Government standards? Would you be opposed to that proposition, if the standards of the local community were required by federal law to be based on the same measurements, testing procedures, as the federal law? In other words, the federal law could set limits and then say in a subsection that the local communities can set other limits if they are within, say, a 10-decibel range?

Mr. Howe: I think what would happen if you had the Federal Government giving a certain degree of leeway, there would not be any need for the local community to set a more stringent standard because I think the manufacturers, the prudent manufacturer, is going to build to the maximum or, let us say, however you want to phrase it, the maximum or the minimum. But he is going to build the quietest requirement or meet the quietest requirement that's established by the Federal Government. It's just going to make sense from that standpoint.

And that I think is another good argument for the Federal Government to establish one standard.

The statement was made yesterday that a lot of people felt that the Federal Government might not properly respond in the area of setting and establishing proper, reasonable and good standards, and I again go back to our question of the smoke standards and emission standards. When the national ambient air quality standards were issued, the State of California complained to the Environmental Protection Agency that it felt the standards being proposed by the Federal Government as national ambient air quality standards were too stringent, because California had areas which could not ever possibly meet those requirements. So I think that we have done a disservice—or those who imply that the Federal Government is not going to do the job are doing a disservice to the Federal Government. The Federal Government is attempting to go now into other environmental areas, and I see no reason why the Federal Government wouldn't carry over this same approach to noise.

Mr. BARON: If I understand the testimony correctly, there is a feeling that there should be very little movement in the direction of abatement until we have a more precise measurement technique and more precise cause-and-effect information on the effect of noise; is that correct?

Mr. YOUNG: No. Perhaps there always is a problem in testimony because one attempts to be brief and there is this problem of being misunderstood. I don't think we intend that at all. We say that primary health standards—you know, we support the establishment of those. What we are trying to indicate is that we have in our summary of state legislation some very low levels, as Mr. Howe testified, as low as 70 dB(A). And what we are trying to say is that we think certainly there is room—it would seem that annoyance standards can be set. It's a question of where the Federal Government judges that they should be.

The research aspects I am commenting on are directed towards some of the lower proposals that we have seen. We feel that more research is required before very low levels would be established.

Mr. BARON: What do you mean by primary health standards? Is this your term?

Mr. HOWE: Do you want me to answer that?

The primary health standards, there's a great deal of basis for making the distinction between primary and secondary. Where this is essentially found today in the environmental area is the Clean Air Act which prescribes specifically that primary health standrads, those which would affect the medical or the life expectancy of an individual, have greater priority than secondary or welfare type of standards, those which might be more pleasing but do not necessarily have a medical or health effect. So the primary standard, we feel that certainly in the area of primary noise standards that it is imperative that these standards be proposed and promulgated and enacted as soon as possible, if it is the desire of the Federal Government to preempt the area.

We think as far as the secondary or the welfare standards go that, because they are a little lower on the list of priorities, you must consider the value on the trade-off of the secondary standard of perhaps lowering your dB(A) level a little bit more on certain applications, as to whether one that is really necessary.

Number two, does it have a cost benefit?

Number three, is it going to be of value to the entire populace?

These are the differences between the primary or the priority type of standard as opposed to the secondary or welfare, or it-would-be-nice-to-have-it type of standard, to over-simplify it.

Mr. **Baron**: This is where controversy crops up in the area where you call "would be nice to have." You seem to emphasize, for example, hearing loss is the No. 1 factor in the primary health standard. And yet there is a body of information being developed which, though it in some cases is not conclusive evidence —and I refer to the papers given at the American Academy for the Advancement of Science symposium on the extra-auditory effects of noise in December of 1969—that lower levels cause hearing loss. We are entering areas where it seems there is a potential for harm.

Now, are you suggesting that we wait until we prove that this harm is taking place before we move for standards that are lower than those that prevent hearing losses as now defined?

Mr. **Howe**: It's a very difficult question to respond to, Mr. Baron, because it's based upon a premise that we have a feeling that something is going to be dangerous but we don't know. I think what we have to determine first is that you speak of these possibilities we are experiencing right now, in the last three weeks, where we thought that we had with phosphates a very dangerous situation. Now we have had a complete turn-about on that.

Yesterday in the Wall Street Journal is the article about recycled paper being used for food cartons, and we have now had a turn-about on that.

What we are saying here—and what we want—is, we are not against standards. Quite to the contrary. We are in favor of them. We are in favor of those which are going to be required to do the job, to meet those primary health goals which are going to be established through such things as these panels and research and information being gathered. But our problem is perhaps we are a little bit late in getting to the question of noise and environmental problems, and now we have to really bend over backward and speed up the process of research in this area.

Dr. **Meyer**: Mr. Baron, would you yield a minute, sir? Let me see if I can cast this problem in a perhaps better perspective.

Primary health standards, as used in the Air Quality Act, indeed relate to primary health effects on human beings. Even there it is recognized that the body of evidence about production of emphysema, production of asthma, production of lung cancer, all the other physiological effects, is very, very nebulous in certain areas. There is presumptive proof, most of it based on epidemiology, that above certain levels there is a steady increase in the incidence of cardiovascular-respiratory diseases due to air pollution, and that a series of criteria documents were prepared by the Air Pollution Office, formerly the National Air Pollution Control Administration, which elicited the information. It represents the best data known on the range of effects for a whole variety of the insults in the atmosphere.

Now, the welfare standards, the secondary standards in the case of welfare, were not related so much to effects on humans but on attributes in the environment which might cause either psychological reactions or property value deterioration, such as the following sort of characteristics.

Effects on vegetation. This is an ecological effect. In other words, it might reduce oxides and cause plants to wither. And plants are important—and they are important for a lot of reasons, and not only to produce food, but also as a part of the ecosystem for the transportation in the atmosphere of certain of the components necessary to human life. That is a secondary effect.

The limitations on visibility. This is a matter that Mr. Bogost from Hawaii might have pointed out, that the State of Hawaii's air pollution standards are secondary standards, the ruling standards, because they are interested in a clear atmosphere so that people can see they have set their secondary standard without using health effects as criteria at all. And the secondary standard in that case happens to be the overridng one.

Now, another thing that is different from the issue we are dealing with is that in the Clean Air Act it said you will set these primary standards first because for instance, we want to get the instance of cardiovascular-respiratory diseases down. But if a state chooses to, within the Act, it can establish a secondary standard and it can set that standard at the same time, for the same implementation schedule as the primary. The only difference is it couldn't avoid setting a primary standard.

Mr. **Howe**: That's correct. It's a question of priority.

Dr. **Meyer**: They couldn't avoid setting a primary standard, and it had no requirement to set a secondary standard. The state had an option, if it wanted to. If the state wanted to, it could say that, "I consider these aspects more important to the benefit of the state, the welfare of this state."

I am taking a minute on this because it's very important to this particular issue. I want to remind the group that the whole process in the Air Quality Act is not really analogous, as some people believe to the Noise Act. And once the standard is set, it says, "This is the level which shall be permitted in the atmosphere." Then the state is required to make a point-source emission inventory and set for each of those a limit as to what may be injected into the atmosphere so that the ambient will not be exceeded.

It is a very complicated process, and in this, of course, the motor vehicle is considered as a running, continuous source. But for the point-source, a specific identification of each one must be made, and then a determination is made as to what will be allowed to come from that stack.

Now, this is not analogous to what we are talking about completely in the noise area, although there are some relationships which are parallel which are envisioned in our current legislation.

I am taking the time of you and the other participants to explain this so we don't get cluttered up in trying to make a direct analogy here. Otherwise, we are going to be in trouble.

Mr. **Howe**: I agree completely. The only reason I make reference to it is that it shows the precedent, I think, by which we derive the terms of primary and secondary.

Dr. **Meyer**: Mr. Baron, do you have another question?

Mr. **Baron**: Your reference to the relationship of complaints to action, do you really believe that the complaints are the—are in all cases that one-to-one barometer of the existence of a noise problem?

Mr. **Young**: No. That's the point we are trying to make, exactly that, in fact. We do not intend to make any criticism of the sensitive people who may complain, as the lady yesterday discussed. Many times these people alert us to problems before we reach unmanageable proportions.

Nor are we trying to downgrade the fact that complaints are a factor in the establishment of legislation. We think they should be, and we commend EPA's Region IX, I guess it was, DA publication which was on the desk here the other day. We would like to see complaints publicized. We go to many states on decibel/smoke regulations and we ask the agency how many complaints you have, and we can't get information.

Now, we are trying to judge the severity of the problem. That's only one factor. The reason for bringing that dialogue into my testimony at all was to indicate that there are other factors that ought to be considered above and beyond complaints. Complaints are a factor, but there are cost benefits, there are technical data that should be developed to judge the establishment of the standard. There are criteria, and so forth.

Mr. **Baron**: I would like to bring to your attention the sleep studies which show that automobile traffic, and so forth, at the levels of 50, 45, 50, 55, can cause changes in sleep state. Also, there has been research on the effects of noise on the human fetus. In some cases we may not be able to establish clear-cut proof of harm.

Mr. **Young**: I understand that.

Mr. **Baron**: And in listening to your testimony, I get the feeling that this may forestall effective noise abatement for a long period of time.

Mr. **Howe**: I have got to take exception to that, Mr. Baron, because I don't think that is our intent. It certainly is not our intent. We are here to, hopefully, provide some input and some considerations that we think should be made in establishing standards. I think, though, any time that you try to establish standards, ideally we could say that no noise would be ideal. But we know that some people will have a very bad mental or psychological effect upon them if there is no noise. And maybe perhaps this is just having grown used to our own environment. But to be placed into a quiet room may sometimes be more shattering than being put out in an area with a certain degree of noise.

We are concerned that standards be set that are realistic; standards are set that are going to do the job that is necessary to protect and improve our environment. That's our concern.

Mr. BARON: Well, is it realistic to ask the public to wait decades for the setting of standards?

Mr. HOWE: Nobody is asking them to wait decades.

Mr. BARON: Where are the standards?

Mr. HOWE: That's what I thought this panel was partially going to help us do, is establish the standards.

Mr. BARON: Don't you believe in the concept of voluntary standards?

Mr. HOWE: Well, voluntary standards I think we live with and we are living with voluntary standards. That's what we have now, more or less, except in some communities where we do have some other standards. We had for many years—Many years we had just muffler standards, the requirement that a muffler be placed on an automobile. That was really the only standard that we had, or that it not be a loud noise or disturb the peace. We have very subjective standards.

Now we are reaching the point of scientific development where we can have exact and quantitative standards which will help do the job more effectively.

Mr. YOUNG: As a matter of fact, sir, in the smoke area which we are familiar with, we find—and it's evident—that if you want to clear up the smoke problem, we can show that the federal standard is set so that it can be enforced and understood by the people, which is what will clear up the smoke problem. Since many of the states are acting on their own in the smoke area, you find some states are effectively enforcing smoke regulations. Other states do not even have regulations. And it is our view that the Federal Government doing this would achieve actually clearing up the smoke problem, and can achieve actually clearing up of the noise problem, that is, a reduction of noise more rapidly and more effectively.

This is one of the reasons, the basic reason, we support this preemption. We are not at all in any way against the establishment of standards.

Mr. BARON: Without going into the question of preemption, what is disturbing to me is your interpretation of the—some of the input that goes into the studying of standards. I would like to point out, incidentally, that the term "unnecessary noise" apparently has a legal connotation. Is that correct?

Mr. HOWE: Well, the term "noise" has a definite legal definition.

Mr. BARON: Unnecessary noise.

Mr. HOWE: "Unnecessary noise" perhaps has a significance. Unnecessary noise is—I am not quite sure I can respond to your question.

Mr. BARON: In a quote from the Administrator, Environmental Protection Agency of the City of New York, in guidelines to the proposed New York City Code, he says:

> "That while the term 'unnecessary noise' sounds vague to the layman's ear, it is in fact a judicial term which has been defined by a substantial body of case law. Like the term 'reasonable man,' it has a specific meaning in court."

Mr. Howe: Well, unnecessary noise, I think, would only have legal significance insofar as it being tied to a nuisance situation.

Dr. Plager: Mr. Hildebrand, I would like your aid here, if you have a different impression of this. But "unnecessary noise" would be a method by which the court would be making a determination as to whether the noise which is being emitted from a particular area is a nuisance, and it's a subjective standard.

The reasonable man is a subjective standard. So the term "unnecessary noise" also is a subjective standard which has been adopted. The law has in the common law area subjective standards for purposes of making determinations as to what is or was not a nuisance.

Mr. Baron: We are in a new era, incidentally, and this is called the Environmental Protection Agency where a thing called the quality of life is taken into consideration. And this is something that's not easily measured. And when you talk about decibel analysis, would you accept the fact that into that analysis comes the cost of noise to the environment and the people in that environment? You mentioned—

Mr. Howe: It has to. It has to.

Mr. Baron:—because you mentioned mostly only the costs on the other side.

Mr. Young: We are over-emphasizing that because we see a present lack of it in a lot of the state proposals that are now coming up, and we feel that it should be one of the factors; not the only factor.

We would agree, you know, quality of life is important.

Mr. Baron: You also mentioned economic impact of undesirable noise emissions upon such things as property value. I don't think, not being a lawyer—How would I phrase this?

In many cases tenants suffer from the noise emissions created by products powered by internal combustion engines. They have no rights. Would you be willing to see them having some rights?

Mr. Howe: I am not quite sure that they have no rights. They probably suffer more often from the noise of their neighbors playing radios too loud, or something else. But I am not quite sure that they don't have rights. They certainly, if you are going to have standards and regulations imposed—they are going to have rights just as everyone else does because those standards and regulations are going to be established for their benefit as well as everyone else's.

Mr. Baron: Are you aware of the fact that one of the things—I understand one of the reasons that it's so difficult to get the air compressors' noise down is because of the power plant. In other words, some of the manufacturers have gone for quieter compressors, which essentially is putting an acoustical box around the power plant. But they can only go a certain distance without the power plant itself being designed for quiet.

Mr. Howe: Can you respond to that?

Mr. Young: I think you already have testimony in these hearings to that effect, sir.

Mr. Baron: There are many questions that I could ask, because the internal combustion engine, as you know, is being accused by many in the field of environment, and conservation, and so on, as one of the chief threats to the quality of our environment. But in respect to the problem of time, I will not go into that except this here. You talk about precision in terms of annoyance formula, which, incidentally, are being questioned whether those are the ways of measurement of how we go ahead and abate noise. You talk about precision of standards, and so on, and yet I would like to point out something that I am sure you are aware of, and that is that the most effective noise abatement device and experience took place—I don't know when it was, 1915 or 1925, before the development of standards, before the development of information on—such as we have now on the effect of noise on man and the environment, and that was the automobile engine, the muffled automobile engine. And there was an economic motive at that time which was that they were resisting the introduction of the car into the city because it disturbed horses. And I would respectfully suggest that apparently human beings, for whatever reason, are a little bit more tolerant than horses, but they are becoming less tolerant of what the internal combustion engine is doing to their environment.

Mr. YOUNG: Well, we support the establishment both of primary and secondary standards. All we are trying to say is that we don't want to get into situations like the phosphate situation, and we are trying in a somewhat brief time to alert the panel and the Environmental Protection Agency to other factors which we feel ought to be considered. We are not requiring or insisting, nor is it our intent to say that we should have precise proof for all of these. We are asking that they be evaluated and that they be considered, and perhaps, because we have seen them not considered, we have over-accented them in our testimony, again due to brevity of time.

Mr. BARON: On this issue of noise pollution, which is a generalization, but in research done in Canada it was pointed out at the National Research Council that the ambient noise level of the city is caused to a large degree—I know you excluded passenger cars from your purview, but from motor vehicles. And it determines that—they determined the ambient level of a city—

Mr. HOWE: I think you have to take into consideration that the engine is only one part of the automobile. You heard testimony yesterday about tires, the problems with tires. Dr. Meyer made reference yesterday to one test that he observed, or heard about, which is true, where an automobile is taken to the top of a ramp, the motor is turned off completely and the car is rolled down the ramp, and it has the same dB(A) level with the motor off being rolled down the ramp as with it on.

We have the same with boats being pushed through water or dragged through water without an engine being on.

There are many elements that go into making the composite of noise. There are very few in which the engine alone is the sole cause of the noise or the decibel level.

Mr. BARON: Well, do you question the engine is one of the primary sources of noise? I understand these other points you are making.

Mr. HOWE: Certainly not.

Mr. **Young**: It's obvious we don't intend to say it is not. We are trying to indicate that we support proper standards for control based on all factors considered, you know.

Mr. **Howe**: I hope, Mr. Baron, you don't have the impression that our testimony here is against standards. It's certainly not. It's very much in favor of standards.

Mr. **Baron**: No, gentlemen, I know it's for standards. I only suggest that you not evaluate so closely your concepts of what standards should be in terms of an over-simplified interpretation of the reaction of human beings to noise.

Mr. **Howe**: Well, we hope that the sole determinant of standards is not going to be just the reaction of human beings, either. We hope that the standards will be tempered by all factors which are necessary to make a proper evaluation and consideration of what is going to be best for the population taken into consideration more than just the visceral reaction of one or two or three or four or five hundred people. That's our concern.

Mr. Baron. I again close by saying that, "Do not, as you just did again, over-simplify the impact of noise, excessive noise, on human beings in the input in this dollar debit equation."

Mr. **Howe**: We haven't.

Mr. **Baron**: You just did it before when you talked about a visceral reaction. I don't care to continue.

Dr. **Meyer**: As a matter of fact, we are going to end discussion here. Hopefully, we can continue this line of discussion at the Washington hearing, at which these gentlemen have agreed to appear. I am planning only to have about four or five witnesses at most during each of the morning and evening sessions of that hearing. It will run for four days because of this very important consideration of what we consider not cost benefits but cost effectiveness. Where do you get the most return for the dollars and where do you get out of this business of trying to trade off cost which so many people are attempting to fall into on the cost benefit thing of saying, "Well, it costs so much to do the job. You are only getting this much return."

What we would rather say is what benefit to mankind are you getting?

In the interest of time, gentlemen, because we have been with these two witnesses for almost an hour and a half because they had a great deal to say and there were a number of questions, if you have any questions, would you mind giving them to me in writing and they will appear in the record. Would you yield to that extent?

Dr. **Dietrich**: Certainly.

Dr. **Meyer**: Fine. Unfortunately, today, unlike the other days, as I said earlier, we have got to leave early to proceed on to another hearing.

I have a request from some people who are on the schedule, Mr. Burtis and Dr. Evans. I understand you all have to leave, but I made a commitment to Mr. Hurlburt from Los Angeles—Inglewood—and I had told him that, if he would be kind enough to stay over night, he would be the second person on the hearing this morning. And if you have to go, I'm sorry, but I made this commitment to Mr. Hurlburt and I am not going to go back on my commitment to him. So if you folks have to go, I apologize, but I have to stick by my promises.

Mr. Hurlburt, we are familiar with your work. We will include in the transcript all of the attachments in this submission that you prepared, so go ahead with your statement but we will include the entire material in the record.

STATEMENT OF RANDALL HURLBURT, CITY OF INGLEWOOD, CALIF.

Mr. RANDALL L. HURLBURT: Okay. Thank you, and it's a pleasure to be here.

Mayor Mergell from Inglewood asked me to convey to you his personal appreciation for the important task you are undertaking, and asked me to outline for you some important aspects of the urban noise problem from the point of view of an involved city, which Inglewood is. My testimony will be in the form of a brief over-view of the detailed report that you have in front of you which I hope you will find a convenient text to refer to in the future. It does have several appendices which give details of the municipal noise ordinance and its enforcement; discusses the special problem of aircraft noise in communities, and provides recommendations for national noise standards and policies.

Now, many speakers have already eloquently expressed the despair which people feel over their deteriorating noise environment, so I don't think I could improve on what they have already said. I will try to confine my remarks, as much as possible, to specific proposals and recommendations.

The City of Inglewood was founded in 1887 and incorporated in 1908. Nearly 90,000 citizens now reside in the city. Although located near the Los Angeles International Airport, noise was not considered to be a severe problem until the advent of the jet aircraft in 1959. With its high-pitched scream during approach to landing and with the great increase in number of flights that has taken place during the last ten years, the jet airplane has made Inglewood today an extremely noise-polluted city. More than one-half of the city is afflicted by aircraft noise levels in excess of 90 PndB as the map designated as Appendix 1 shows.

This extreme aircraft noise problem has made Inglewood citizens exceptionally noise-conscious. Actually, the spread of aircraft noise and motorcycle noise to many previously quiet areas has, in our opinion, increased the sensitivity to noise of a large segment of the U.S. public. In response to this increase in noise and increasing demand for quiet, the Inglewood city government instituted a noise control program aimed at reducing all kinds of noise to the maximum extent feasible. This program is outlined in Appendix 2, "The Ten Point Action Program for the Alleviation of Noise Pollution in Inglewood, California." This report basically outlines what the City can and is doing itself, as well as what the air transportation system can and should do to help cities near airports.

Inglewood is developing soundproofing codes to apply to all new construction under or near the flight path. Land use changes are being planned where appropriate and feasible. A comprehensive noise ordinance has been adopted and is being enforced using modern acoustical measuring equipment. Two lawsuits are pending in the courts, one to achieve certain changes at the airport, the other to assert Inglewood's right to prosecute aircraft that wander outside of the navigable airspace. Through its own efforts and the efforts of the National Organization to Insure a Sound-controlled Environment (NOISE), Inglewood is seeking new laws, policies, or regulations at the state and national levels that would reduce noise pollution.

Inglewood believes that there are a large number of noise abatement alternatives open to the airport, the airlines, and the FAA. A few of these alternatives are outlined generally in the "Ten Point Program." These and others are discussed in more detail in Appendix 3, "Aircraft Noise Abatement Alternatives." In general, glide slope increases, approach pattern revisions, quieter engines, and runway extensions are all within the state of the art technically and would provide substantial relief to residents near airports. In our opinion, the costs involved would be small compared to the benefits received. A complete study of the costs and benefits of a quiet engine retrofit program is available on request from the Environmental Standards Division of the City of Inglewood. A resolution adopted by the Inglewood City Council urging the EPA to conduct an environmental review of a proposed runway construction project at Los Angeles is included herein as Appendix 4.

Appendix 5 is a letter from the City of Inglewood to the EPA outlining the major noise problems in Inglewood and the way that the Environmental Standards Division enforces Inglewood's noise ordinance. The noise ordinance itself is included as Appendix 6. A draft circular "Community Noise Control—Training Guide and Enforcement Manual" is included as Appendix 7 and may be helpful to cities just embarking on a noise control program.

Three things are important to bring out concerning municipal noise ordinances. First, there are some noises that cannot be controlled by decibel standards, such as barking dogs or raucus parties. Second, there are some noises that are not within the jurisdiction of municipalities, such as most transportation noises. Third, where decibel criteria do apply, the same levels may not apply to different communities or neighborhoods.

The Inglewood ordinance takes these three factors into account by using reasonableness as the guide for sounds not amenable to decibel standards; by regulating such things as transportation noise only to the extent provided for in state or federal laws, and by using the "relative sound level" or "decibels above the ambient" as the criteria wherever sound measurements are appropriate.

A general discussion of Inglewood's experience with its noise control program is supplied as Appendix 8. Much of our program is based on carefully collected measurement data. Our mobile acoustical laboratory, one of two noise monitoring systems representing an investment of approximately $50,000, is shown in Appendix 9.

We feel that the EPA should adopt national standards for transportation noise and national criteria for other environmental noise. The reason for recommending national standards rather than local standards for transportation noise is that vehicles can usually not conveniently adjust their sound to comply with local ordinances. We particularly feel that aircraft noise standards are needed because none exist at present. The national standards should, however, provide the right for states to adopt stricter standards if they so desire. (For the information of EPA, Inglewood feels that present motor vehicle noise limits in California are especially lenient and we therefore believe national standards should be set stricter than what California has now.)

The reason for recommending "criteria" rather than "standards" for other environmental noise is that the enforcing agencies will most likely be local governments, and they should be able to tailor their ordinances to their noise environment. Therefore, criteria such as used in Inglewood ordinance (5dB(A) above the ambient noise) or as outlined in ISO Draft Recommendation 529E "Noise Assessment with Respect to Community Response" can be adapted for use in either rural or urban areas. (Inglewood does feel that ISO Draft Recommendation 529E errs in allowing short duration noise to exceed the ambient by as much as 30 dB(A). As indicated in Appendix 7, we feel that 15 dB(A) above the ambient should be the maximum even for short duration noise. Also, as indicated in Section 4603 of Inglewood's noise ordinance (Appendix 6), we believe that "ambient noise base levels" appropriate to each community should be established to protect equipment owners from the uncertainty of not knowing how low the ambient noise level may fall.)

A word on the many different decibel scales: in our opinion, they serve as a deterrent to progress in that meaningful noise reduction programs stall over debates on the merits of various scales. In our opinion, national standards and criteria should be established in any set of consistent units and then a statement made to the effect that "any other unit that can be shown to be reasonably equivalent to that contained in the standard may be used." For the most part, we believe that the dB(A) unit makes the most sense for any enforcement activity because of its simplicity and low cost. Our experience indicates that for transportation noises 75 dB(A) is acceptable (lower levels are desirable). 85 dB(A) is tolerable outdoors (soundproofing would be required if such noise occurred during evening or nighttime hours), and anything above 85 dB(A) is intolerable.

The composite scales developed for aircraft noise, while perhaps not perfect, are sufficiently accurate to be used as standards. NEF, CNEL, or any reasonably equivalent composite scale is satisfactory with CNEL having the advantage of simplicity (it uses dB(A) as the base data). In general, we agree with FAA reports that an NEF value greater than 40 is unacceptable for residential purposes, NEF 30 to 40 is acceptable if residences are soundproofed, and NEF values less than 30 are acceptable. In some cases, however, especially where quiet or rural neighborhoods are involved, NEF 20 seems to be the problem level and should be considered when establishing standards.

Appendix 10 is a resolution adopted by the Inglewood City Council outlining a National Urban Policy on Noise. It could very well be adopted as an EPA policy. We feel the EPA should establish:

1. National criteria for acceptable community noise levels.
2. Aircraft noise standards to include:
    a. Noise level reduction by engine retrofit and operational changes.
    b. Restrictions on number, routing, and scheduling of flights to reduce the total noise impact on residential neighborhoods.
    c. Funding assistance to cities and homeowners for relocation, redevelopment, and soundproofing near airports.
3. Other transportation noise standards, with particular emphasis on motor vehicle noise.

The City of Inglewood will be pleased to assist the EPA at any time with regard to municipal noise control or aircraft noise abatement.

Thank you.

Dr. **Meyer**: Thank you, Mr. Hurlburt. I hope that since we have this morning the Chairman of the Society of Automotive Engineers' Vehicle Sound Level Committee, who is going to give a brief statement, and also a representative of the American National Standards Institute who is going to give a statement, that in their statements they are going to address themselves to the issue which has been the running theme of this hearing on the problems of criteria and standard units of measurement, which, indeed, I think all of us recognize as a pretty difficult one.

Your point here is well said. I appreciate the very concise statement of what Inglewood's problems are and what they are doing about it, and particularly some of the things which will be very useful to us.

Mr. Martin, do you have any comment?

Mr. **Martin**: Just a few.

You state that you feel the California limits that are set are a little lenient and then, of course, you have indicated some levels that you would like to see. Are these levels, in your opinion, attainable immediately, or as proposed by California levels—the meaning here is that they are planned for the future in their law. Do you feel that those levels should be imposed immediately to cover those vehicles?

Mr. **Hurlburt**: The levels that I mentioned, I was referring more to aircraft noise than motor vehicle noise. And I was referring to acceptable and tolerable levels from our experience. Our experience in measuring motor vehicle noise and listening to motor vehicle noise is that almost no cars on the road today exceed 80 dB(A). And I believe the California standards are 86.

Mr. **Martin**: Then the only one you feel is too leninet is the passenger car one?

Mr. **Hurlburt**: Well, the same thing holds true for trucks. Almost all trucks can better that 85 dB(A) limit. As a matter of fact, that's what the industry itself recommended many years ago. I think that's the equivalent of the 125 SAE sones, whereas the California standard today is 88 dB(A). So in general across the board for trucks, motor vehicles and cars, I feel that the California standards as they are today are lenient.

Dr. **Dietrich**: I read with some interest some of the more detailed discussions of your difficulties with motor vehicle noise. I was just wondering whether you look to some relief also from the—more flexibility in its site restrictions.

Mr. **Hurlburt**: Absolutely. Absolutely. We look forward with eagerness to relief in the site restriction procedures that now exist, and as soon as they are relieved, our Police Department will begin enforcing the present rules to the best of its ability.

Dr. **Dietrich**: With regard to aircraft noise, we have had some testimony yesterday about some of the difficulties that the City of Inglewood is involved in in attempting to use federal rules themselves to enforce aircraft behavior, influence aircraft flight over the city. I am just wondering whether, on review that you might have made of the legislation currently before the Congress, whether you think there might be some kind of provision in there specific to aircraft—to the problem of aircraft noise that would allow local and municipalities to do what you are attempting to do; that is, make it more specific; that this is allowed, rather than leave it in what I think to be a rather gray area where there has been a challenge to you by FAA.

Mr. **Hurlburt**: To my knowledge, it is not specifically acknowledged in present regulations.

Dr. **Dietrich**: Well, would you recommend this?

Mr. **Hurlburt**: I would recommend, though, that it be included, yes. I would recommend that the EPA establish airport community noise standards most likely along the lines of the California Airport Noise Standard, but including acknowledgement of communities' rights to enforce noise standards where aircraft violate federal law.

Dr. **Dietrich**: Thank you.

Mr. **Baron**: For the record, would you define the difference between "standard" and "criteria"?

Mr. **Hurlburt**: The difference that I was proposing for transportation in particular as a standard would be something that would be a federal law, enforced by federal agencies. Criteria, I believe I was proposing as guidelines for communities to use in establishing their own municipal noise ordinances that would not be binding, but it would be like a model, more or less.

Dr. **Meyer**: Might I clarify something?

Alex, I think we mentioned this one time at another hearing. Mr. Hurlburt's statement there pretty well says it as it comes out in application. In environmental usage in general, in water and other environment hazards, such as radiation and also applicable in noise, that general usage of the term "criteria" is a statement of established cause-and-effect relationships of various quantities or levels of environmental insults; one of the documented effects on people and things arising from their presence in the environment.

"Standard" is a statement of permitted environmental conditions which is based on a criteria.

Now, if you go to the dictionary, you will find that criteria and standards are almost synonymous. But in the environmental sense, they have a very specific meaning. A standard can be set by a community, which would be a community standard. A standard may be set by a state. It may be set by the Federal Government. But the criteria is the document you use along with other technological and economic documents to discern which of these levels create the effect that you are going to permit to exist.

Does that clarify the point for you, sir?

Dr. **DIETRICH**: I just wanted to add that some things—a third—or distinguish a third term there, which is regulations or rules, and these, of course, are the actual tools that you use to try and achieve the standard that you have set and couched in legal language, and so forth.

Dr. **MEYER**: Did you have another question?

Mr. **BARON**: You say that the NEF 30 is acceptable for residences, and then you say that for quiet neighborhoods it should be NEF 20. I am interested in what—What is your concept of a residential environment which is not so quiet?

Mr. **HURLBURT**: I guess I can only refer—

Mr. **BARON**: I raise this because I have heard a question about NEF 30 as a base line.

Mr. **HURLBURT**: Well, NEF 30 is what is established in some reports by the FAA, and I guess for a community like Inglewood, where it's right in the heart of a metropolitan area, NEF 30 would be acceptable. It would be a tremendous improvement. In other communities, such as Beverly Hills, such as Newport Beach, communities you have heard from that are in outlying areas that try to preserve a fairly rural, suburban atmosphere, you would find substantial complaints and substantial community reactions as far as the NEF 20 contour.

Mr. **BARON**: Well, knowing that you do know about the effect of noise, and so on, would you—would you not agree that a long-term goal should really be something towards, we will say in this case, an NEF 20 for all areas, if possible?

Mr. **HURLBURT**: Yes, I would. I would agree with that.

Mr. **BARON**: Thank you.

For the Panel's sake, CNEL is Community Noise—

Dr. **MEYER**: Exposure Levels.

Mr. **HURLBURT**: Community Noise Equivalent Level or Exposure Level?

Dr. **MEYER**: CNEL is "Exposure," evidently.

A **MEMBER OF THE AUDIENCE**: Equivalent level.

Mr. **BARON**: This measurement comes from what source?

Mr. **HURLBURT**: That is the one recommended by the California State Department of Aeronautics in their Aiport Noise Standards.

Mr. **BARON**: Is it related to the ISO. or any other—

Mr. **HURLBURT**: Not to my knowledge. It was developed specifically for their noise standards, so that enforcement could be accomplished using the dB(A) unit of measurement.

Mr. **BARON**: Thank you.

Dr. **MEYER**: Mr. Hildebrand?

Mr. **HILDEBRAND**: No questions.

Dr. **MEYER**: Dr. Plager?

Dr. **PLAGER**: No questions. My questions have been answered.

Dr. **MEYER**: Thank you very, very much.

I will now ask, again keeping my promises, is the representative of the Automotive Parts and Accessories Association here?

So the other witnesses will understand, we ran quite late yesterday and we had an alternative of some people volunteering to come here at eight o'clock in the morning, and they have been here. And again we are running a little late, and so I don't want people to get offended, and I want witnesses to stay if they possibly can because we want to hear from them. If they can't, for compelling reasons, we will receive their testimony for the record and send them questions in writing. But when people have changed their schedules markedly, I feel obligated to have them heard.

Mr. Dale Hoge: Dr. Meyer, I believe you have copies of that.

Dr. Meyer: Yes, we have copies of your testimony, if you want to summarize it, or if you want to read the whole thing.

STATEMENT OF DALE HOGE. FOR ERIN FENTON. AUTOMOTIVE PARTS AND ACCESSORIES ASSOC.

Mr. Hoge: Mr. Fenton, as you know, could not stay over, so I will summarize. Mr. Fenton had to leave yesterday, as you know, so I will summarize his report.

My name is Dale Hoge. I am the Director of Standards in the Research and Development Department of the Automotive Parts and Accessories Association.

The Automotive Parts and Accessories Association, headquartered in Washington, D.C., is a Trade Association of over 500 members serving the multi-billion dollar automotive aftermarket industry. Essentially, this multi-billion dollar market, involving hundreds of thousands of jobs, is principally the retail market, constituted primarily of enterprises that sell automotive merchandise over the counter directly to the consumer . . . as opposed to franchise dealerships or service stations which also sell these items directly to the consumer.

We include in our membership, with full equity, the manufacturers who sell into this market, distributors and retailers. In fact, in terms of actual outlets to the ultimate user of automotive products, our market makes the closest and most frequent contact with the consumer.

APAA certainly favors the abatement of environmental hazards to the public health and recognizes that inordinate noise levels present just such a hazard. Noise, as a factor related to health, is under continuous study in industry and various States have initiated some regulatory action. In no known instances have regulations been enforced at levels of measurement that were unreasonable or that denied continued commerce. APAA encourages the EPA to carefully research all causes of noise; how these noises can be isolated for measurement and maximum levels that can be tolerated by each of us as individuals. We call to your attention that, in the ordinary course of commerce, for example, a passing train will cause a higher noise level than all the surrounding automobiles operating as they do today. Many, many such instances can be recited.

Although the present state of the acoustical science has been greatly advanced through technological efforts sponsored by industry, universities and the government, we believe that the state of the acoustical art needs to be further refined to more adequately measure and quantify sound beyond the present technique based on decibels (dB). We encourage research efforts to develop measurement techniques that can be understood by the public, so that the standards can be useful in advising the public of the danger of excessive sound, but yet, most importantly, allowing the general public to modify and/or repair excessively noisy vehicles at a minimum of expense. This can only be achieved in a free competitive market.

Proposals presently before Congress would empower the Environmental Protection Agency (EPA) with rule-making authority over certain products, if the Administrator determines that they create an environmental problem. We encourage the use of private industry to help identify these problem areas and to help compile the scientific data essential to making such a determination. Past experience indicates the need for the Government to develop correct data before it sets standards in any regulatory field. In light of the developmental nature of noise level and affect information and studies, we suggest that the EPA not be burdened with unreasonable deadlines for the setting of standards, but, rather, that EPA be given sufficient latitude to develop truly effective performance standards. Unreasonably short mandatory dates for standards will tend to encourage expedients in the adoption of standards and measurement methods. Applying standards on a "We must do it now regardless of consequence" will result in economic disaster.

We believe it most important that EPA "hurry slowly" in arriving at any standards which place unnecessary burdens on industry and business which could cause massive loss of jobs and opportunity without major benefits. It is suggested that, if standards must be set, these be at level which may regulate inordinately excessive noise but not at levels which seek to create an instant "lullaby" atmosphere. Such an effort to create "lullaby sound levels" would, in our opinion, disrupt one of our country's largest industries with resultant loss of an infinite number of jobs.

We feel that adequate time must be allowed for a proper interchange of data between private industry and EPA so that we in the automotive aftermarket industry will not be faced with regulations which could be inconsistent, and incompatible, with other regulations governing us issued by other Government Agencies. We are now regulated in two areas: vehicle safety and vehicle exhaust emission. The addition of noise emission control will be a third new area of regulation in the automotive field. We can only ask of you that EPA regulations be uniform and that they be drafted in a manner consistent and compatible with existing and future regulations covering vehicle safety and vehicle exhaust emission.

APAA wishes to direct the attention of EPA to an additional point—one of great concern to the thousands of businessmen engaged in the automotive aftermarket industry—and that is restraint of competition. We request EPA, if it sets standards in a given field, to set meaningful performance standards and avoid expedient design standards which will by their effect limit to single or very few the opportunity to manufacture and sell such automobile parts. It may seem to be simpler to require the replacement of parts with identical products made by the original supplier as a quick means of insuring continued satisfactory performance of an item. However, to set design standards precludes innovation or improvement, and is basically inconsistent with the existing prohibition against discriminate trade practice. By setting design standards, you tend to increase the already monopolistic tendencies in the auto industry. Proper performance standards can benefit the consumer by giving him a wide latitude of competitive repair and maintenance facilities and parts. In this way, he gains economically because in many instances he is able to buy a replacement product for better than the original equipment and at a substantially lower cost.

APAA does not claim to be expert in the technical aspects of sound measurement. Most of our members are medium to small businessmen with no background of technical knowledge of noise measurement techniques. It would be virtually impossible for us to assist the public in understanding noise standards for products as they are presently defined in terms of decibels, frequency, etc. Yet this understanding would be necessary in the businessman-consumer relationship. We know that acoustical measurement is an imperfect science. Specifically, experience with motor vehicles indicates that many factors enter into the definition of sound. For instance, tires may produce more noise on one type of highway than another. Also, there is the unknown composite relationship of road sounds which may vary with traffic density and the surroundings. We clearly feel that more work must be done before meaningful measurement methods can be developed upon which to base standards.

In summary, we should like to make the following recommendations:

1. Standards should be uniform. Federal regulations should be enacted, after appropriate study and consultation with private industry for performance standards re: excessive noise control. These Federal regulations should, of course, preempt action by the individual states so that no state may set standards or seek to control noise levels in a manner contrary to the Federal regulations.
2. We endorse the principle which calls for the establishment of criteria. Such criteria should include the level at which damage to persons occurs. They should identify all the contributing factors that make up the noise level, including non-vehicle sources. Only when the criteria are established can EPA properly have the tools to establish noise standards. We would hope that EPA would work with the public and the industries involved in the developmental periods so that the many technical studies and the practical application of them can be available to them.
3. Durability standards over the life of the product, if established, should be drafted to cover only the performance of

the product. The public will benefit most where the products meet objective performance standards, and where the forces of competition interplay to produce better products less expensively without inhibiting constant improvements. Otherwise, the standards could result in a car manufacturer's claim that since the standard follows the original design specification, no other replacement, however superior it may be, should be introduced into the vehicle. Car manufacturers could claim that if their autos must meet a durability requirement, then they have a right to dictate what kind and who performs maintenance on their cars. APAA fully supports the consumer's right to be fairly advised of the standard and the required maintenance schedule, but he must retain the freedom to secure services and parts from the most reliable and economical source.

4. Labeling has been proposed to insure compliance with Federal Standards, to be an aid for enforcement and to be a warning to users. We feel that labeling does not serve the public's interest either as an enforcement tool or as an informative device. Labeling readily emerges as a way of demonstrating compliance, but misleads persons inspecting equipment for compliance into the belief that a label assures continued acceptable performance. We do not believe so. To insure that products are performing as required, they must be objectively inspected. We suggest that the expedient of labeling be abandoned and a meaningful inspection procedure for automotive equipment be pursued. To do less would be taking half measures towards effective enforcement.

   While we do not wish to belabor the point, we would point out for your consideration that a label may be used to sell noise. For those who are seeking loud pieces of equipment, a label showing noise levels allows the purchaser to buy the one with the highest rating.

   Should labeling occur against our better advice, we would caution further that it should be clearly established that only Federal labeling requirements may exist. Competing or different State labeling requirements raise the prospect of unnecessary compliance procedures among the various states. We believe such a result to be detrimental to commerce without providing a benefit to the public in reducing noise. We further ask that any labeling requirement by EPA be subject to the Administrative Procedures Act so that the public may participate in determining contents of labels. We recommend that careful consideration must be given to the establishment of measuring criteria so that label content will be of value to the public who must read and understand this information before they are of any value.

5. We recommend that the measurement methods, including specifically measurement equipment and facilities, adopted to insure compliance with the standards be as simple and inexpensive as possible. In this way, no independent small businessman in the automotive aftermarket industry will

be foreclosed from buying such equipment so that he can conduct tests for compliance. Otherwise, once again, EPA would be furthering the monopolistic trends in the auto industry.

6. We believe that priorities in establishing standards for noise control should be established based upon the elements of the industry that create the greatest problem; i.e., the heavier and obviously noisier busses, trucks, tractors and other off-the-road vehicles and construction equipment. This policy will allow the Administrator to proceed in an orderly manner and adopt noise standards only when there is a demonstrated need for each standard. The sound level reduction of the infinite number of sources of noise, other than passenger cars and similar road vehicles, could indicate an overall combined noise level reduction that eliminated any major need or urgency for passenger car sound control. The sound levels in automobiles should be carefully surveyed to determine to what degree they contribute to total noise levels. Noise levels do not increase impirically by the level of each noise in the atmosphere but, normally, reach the single level of the predominant sound.
7. For the purpose of Federal consistency in the establishment of regulations in the transportation field, we recommend the various governmental agencies in the field of vehicle safety, emission controls and noise standards work, through their now existing councils composed of public and industry representatives, to advise on priorities and conflicts in the adoption of competing standards by each agency. Such advisory councils could be formed into a body which would give a balanced overview and could help to recommend policy that would transcend each individual agency's jurisdiction. That way, they could assist the Administrator of EPA and DOT in developing compatible standards in the transportation field.

Dr. **Meyer**: Thank you, sir. And you clearly highlighted a very important point, and that is, if you are going to set a standard, you have got to set a measurement technique. And that's the reason I am glad we are going to hear some words in a little while from people who are concerned with measurement methods, measurement technology, and the application of these devices that make measurements.

Again, you have given me—through me, to the Agency—a reminder that we have got to keep in close view the practicality of having not just a state measuring station, but devices through which noise levels can be measured and checked out by the user or the maintainer. That's a very excellent point.

Lastly, your admonition to make haste slowly is one that, for very obvious reasons is important. There have been some examples of not taking into account all of the considerations that one ought to. And from my dealings with the Administrator and with the Congress, I know it's their intent that we do the best job possible of eliciting the facts about noise before we undertake a massive enforcement program. That, in essence, is the reason for this hearing. That's why we are taking a lot of time with it. That's why we have not tried to brush people off.

And similarly, in your other work, we intend to do just as thorough a job as we are trying to do here.

Panel? Mr. Plager?

Dr. **PLAGER**: Just one question, Mr. Hoge, one preliminary question. I take it your industry includes—your Association—muffler people and those kinds of companies?

Mr. **HOGE**: Yes, they do. Those who make them and those who sell them.

Dr. **PLAGER**: What is your industry doing—What is your Association doing to police its own ranks? What are you doing, for example, about questions like muffler advertisers who say, "The closest thing to no muffler sounds great. If you don't want a muffler, here's one that will give you that."

What is your Association doing to make it unnecessary for federal and state governments to have to come around and tell you how to run your business?

Mr. **HOGE**: That was a very good lead-in. Thank you.

We have seen in some trade magazines those types of advertisements. Not necessarily what you say of ads, and practically speaking, we advise some of those advertisers and publications of the fact that they may be trying to produce a product or run contrary to the Acts of several states, several jurisdictions. The cause and effect, as you know as an attorney, has to be limited because of the antitrust problems. We have not the mechanism for enforcing against a specific manufacturer. Some sort of penalty, if he fails to comply with what has been set up as a state standard, we can bring it to his attention and we do do that. And beyond that we are constrained by antitrust to have any other sorts of sanctions against the individual.

Mr. **HILDEBRAND**: It's not clear to me what you mean by the statement that "design standards tend to increase the already monopolistic tendencies in the auto industry."

I think my problem is "design standards." Would you define that?

Mr. **HOGE**: I guess they are translating our experience in the safety field over into the noise area, and that may be unfortunate because it may not always be analogous. But a design standard tends to favor the person who designed the product. He has no further investment to make in that product, and can amortize his cost over a long period of time, if that design is fixed, and he doesn't have to worry about changing or innovating. Whereas, if you have a performance standard, everybody is free to arrive at it as quickly as possible, and the person whose product is the standard does not have that advantage of being able to amortize costs over a long period of time.

Mr. **HILDEBRAND**: Would you be adverse to a—Let's see—a performance standard based upon the original equipment? In other words, the original design—the statement, "the original equipment or equipment with performance equivalent thereto"?

Mr. **HOGE**: I find problems. I don't mean to speak for the manufacturers, but relating or making the original assumption that the original piece of equipment is the best piece of equipment and everybody should design to that standard, I think that's an erroneous assumption. I think that once a determination is made of what is an acceptable level, that reference to the original equipment is unnecessary.

Mr. **Hildebrand**: Thank you.

Mr. **Baron**: It's interesting, if I understand correctly, you would accept an environment that's excessively noisy because you say that regulations only have an inordinately excessively noise—inordinately excessive noise?

Mr. **Hoge**: That is a hard phrase.

Mr. **Baron**: I couldn't say it very rapidly. I will say it slowly this time.

Do I understand you correctly that your industry would accept excessive noise as an environmental goal?

Mr. **Hoge**: I don't think anybody is going to knowingly, consciously and very honestly wish to accept excessive noise. I guess what we have here is the difficulty of semantics, trying to arrive at what really is a high level of noise, which creates a problem. I think what we are trying to get to is: There are certain levels that are very much more damaging and those should be dealt with first, and in an orderly fashion.

I don't mean to imply—and I retract it, if it was said that way—that anyone in our industry would accept excessive noise.

Mr. **Baron**: What do you mean by a "lullaby level"?

Mr. **Hoge**: This is Mr. Fenton's testimony. I have to interpret it. I would say that what has been said yesterday by certain people illustrates very graphically that some individual, justifiably so, may want a very quiet environment, and that may not always be totally impossible in every instance immediately. As a long-term goal, I think we can work towards a much quieter environment, but immediately attempting to achieve that may tend to cause dislocation of industry and also our life patterns. I don't think that today or tomorrow is immediately possible. If it were that way, good.

Mr. **Baron**: One of the things I am driving at is that, in your presentation—in the presentation which is very well presented and coolly presented, and we start talking about noise levels and we find interesting language like "lullaby level," which, as you well know, is a sort of a prejudicial term like "motherhood" and terms that are sometimes used in the field of noise abatement.

Mr. **Hoge**: I beg your indulgence here. Mr. Fenton was not able to be here to present that concept. I am trying to interpret for the industry at large what I would say is an acceptable level, and I would not use that term "lullaby" myself.

Mr. **Baron**: In terms of priority, is your industry—is it really suggesting that we go A, B, C, D, and start with the loudest noises and down that way? You say, "This policy will allow the Administrator to proceed in an orderly manner and adopt noise standards only when there is a demonstrated need for each standard."

Now, we feel there has been enough evidence—I feel, anyway, that there's need for standards in many areas.

Mr. **Hoge**: Well, I think Dr. Meyer can probably support as quickly as I can the fact of limited amounts of funds. Therefore, to benefit people at large, you could direct those funds to the most potent problems right away and that way have the greatest benefit in the reduction of noise. I wouldn't argue that you might have sufficient evidence to determine what that problem is right now, but I am suggesting that funds—which is a good practice, no matter it is—be directed to the most significant problem right away.

Dr. **MEYER**: Could I address myself to that?

The law envisions that there will be a time-table established in which the Administrator, assuming now that the current legislation would be enacted, must identify those sources of noise which he considers to be important from the viewpoint of health and welfare, and must issue standards. The first standards, or the regulations on them, are due out within 24 months. One would interpret this to mean that, for any of the broad spectrum of products which are involved, a standard has got to be set. And so it's not going to make much difference whether it's an important problem or less important problem. We have to approach it within the law. It doesn't make any distinctions; it doesn't give any distinctions.

I hope that answers your question, Alex. If it has an effect on health or welfare, a standard will be set.

Now, obviously that's going to cause us some internal problems as to how to decide which ones you get at first, but there's no distinction in the law of any gradations which contrasts with the primary and secondary approach to air pollution.

(Short recess.)

Dr. **MEYER**: At this point I'd like to ask Dr. Majorie Evans and Mr. Burtis, representatives of the California Society of Professional Engineers, if they would come forward. And following that, we will proceed to get into some discussions regarding standards and measurement methodologies.

Now, I understand you will have a rather close time schedule because of a change in your plans. So if you would like to summarize part of your paper, that will be fine also.

STATEMENT OF DR. MARJORIE EVANS, CALIFORNIA SOCIETY OF PROFESSIONAL ENGINEERS

Dr. **MARJORIE EVANS**: Thank you, Dr. Meyer.

I am the one that's responsible for the pressure, and I am sorry, but there is not much I can do about it.

What I had intended to do, in any case, was to summarize,* and as far as I am concerned, there is plenty of time. I am going to make the court hearing all right.

I want to say first that I represent two groups. One is the town of Los Altos Hills, which has a committee called the Committee for Noise Abatement, and the second one of the groups is the Sierra Club of which I am the Chairman of the Environmental Noise Committee.

The work that's summarized in the report which is before you—and I would like to give you something in addition for the record—this report was carried out for two purposes.

The first was to try to find out what kind of noise was bothering people. We undertook this because we had run into the situation on numerous occasions where figures usually emanating from the California State Division of Highways were cited by various, usually governmental, organizations as being the kind of noise that people would tolerate. It became clear that these levels of noise which were being cited as tolerable were a bit higher than the levels of noise that were acceptable to people in the San Francisco Peninsula area around Los Altos, Palo Alto and Los Altos Hills.

At the top of the bundle of figures which I have just given you a Xerox copy of, a State Division of Highways chart which shows that below 70 dB(A) they have found that complaints are very rare. This is what we set out to test. I made a number of measurements at the various sources which produce noise which affect Los Altos Hills. For the benefit of the people in the audience—You have it before you, but they don't—these sources are Freeway 280, a county freeway known as Foothills Expressway; commercial jet traffic which comes in and goes out of San Francisco and Oakland Airports; Navy turboprops which take off and land at Moffett Field; small aircraft and helicopters from various local airports; and, last but not least, a collection of motor vehicles which are motorcycles, minibikes, sports cars, VW's and trucks.

Question No. 1 was, "How many people are bothered by noise?" Because we hear, and I have heard this morning, comments that if a few hundred people are bothered, it doesn't necessarily mean that all of the people are bothered. So an Association in the town of Los Altos Hills set out to find out, among other things, did noise bother the citizens of this suburban, rural town and, if so, what percentage of the citizens were bothered.

Without attempting to go through the whole thing, I will simply say this: that of the people replying to this survey—and it was a high sample; it was a better-than-50 percent of the—all the people in the town sample—60 percent found motorcycles, minibikes, trucks, and so forth, to be extremely annoying.

Since parts of the town are quiet, this means to me, as I look at the geography, that practically everybody who was in sight of a road which could carry a motorcycle was bothered by the noise.

There were equally high levels of response to the query as to whether they were annoyed by these other sources that I have cited. When you take into consideration the facts that not everyone is within earshot of all of the sources—

Dr. **MEYER**: May I interrupt just a moment, please, ma'am? I have an emergency long-distance call for someone.

(Off-the-record announcement.)

Dr. **MEYER**: Excuse me, ma'am. Now you may proceed.

Dr. **EVANS**: Yes. Thank you.

The next question has to do with what kinds of noise are bothering the people. I have given you there in that set of papers a summary of the results that we got.

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*Dr. Evans' exhibits are on file at the Office of Noise Abatement and Control.

The quiet background is 35 dB(A), 50 dB(C) value in Los Altos Hills. The complaints began, according to the Highway Department, at 70 decibels, dB(A). We found that the complaints actually began at 45 to 48 dB(A), or 55 to 60 dB(C). We found that people living in the badly impacted areas, like along the freeway, for example, or under the jet route, were living with the following maxima—that would be the bursts, the largest bursts, of noise.

From the small aircraft—and I will give you just dB(A) with one exception—62.

The commercial jets, occasionally 72.

The expressway 68.

The freeway, 78.

And motorcycles and minibikes, 80 to 90.

And the Navy turboprops, 68 dB(A) and 70 dB(A) and 78 dB(C).

And I found—we found that while although dB(A) was perfectly satisfactory for all these sources, except the turboprops, it was not clear. For some reason, the noise that's given out, probably the shock waves emanating from the props, gives a low frequency rumble which causes many people to feel that their bones are shaking, their body is shaking, and this often is measured not on the dB(A) but comes through loud and strong on the dB(C). I bring this up not to rely completely on the dB(A), although on the whole it's quite satisfactory.

All right. That completes my comments on the levels of noise that are acceptable. It's my opinion that it's better at this stage of the game to start asking what it is that people want for a level of noise that's acceptable, rather than having it imposed on them by the Division of Highways or the muffler manufacturers or the airplane manufacturers. They are telling the citizens what it is they like. I would like to see us acknowledge that people want it quiet, a bit quieter than the modern technology seems to insist.

Secondly, some people—airplane people, Division of Highways people—insist on having their cake and eating it, too. They will make their measurements and then they will say that complaints are rare below 70 dB(A), and when they are challenged, they will say, "But, yes, look in the fine print. What we meant was peak noise." All right, fine.

Then when we go into this with our measurements to the County Board of Supervisors and say—or the State Division of Highways and say, "This is a problem area. We think you should do something about it." They say, "Well, no, it isn't a problem area because the average level, the background level, is only down there about 64." That way they have things both ways. They can use the peak noise when it's useful for them, and not use it when it isn't useful for them.

A final point on what kind of noise should be measured. Generally speaking, legally there has been a tendency to say, whereas the noise may be 70 or 60, it can be reduced by insulation to 40 to 45 inside a house. I think it's worth getting on the record at this stage and reiterating that until we finally have our way, the people of California, at any rate, do not intend to be mummified, put like a mummy in a sealed house, and protected from the outside because they view the outdoors as being part of their living environment, too.

All of these measurements that were taken were taken outdoors on people's patios which they consider to be part of their living area. And they don't want any thought that suitable measurements in a suburban rural area are to be made inside the house.

Next, second part, problems of enforcement, problems of abatement. I am not going to go into all of these, but I am going to take three where we have the—the town has been trying to—to get some—some help, or to apply laws, appear at the box. And I am simply going to report to you what the situation is in that regard.

In the first place, having the commercial jet aircraft traffic to San Francisco and Oakland has been a matter of concern to my town and neighboring towns for about a year and a half. In the beginning of this year, the FAA decided to reroute one of the major traffic lanes, standard arrival routes from Los Angeles to San Francisco, over us, and we, the town, protested. And I held the opinion and brought this to the view of the FAA and the EPA that that was a major agency action, coming under the National Environmental Policy Act, and that they could not do that. Well, in the ways that our Government works, this claim rattled around until the FAA went ahead and put in the standard arrival route. And since my testimony has been printed up and put in your hands, I am happy to say that it has been agreed—or it was earlier agreed by the EPA—I might say that this was a valid claim, and now I can say that within the last few days the FAA has agreed that the setting of a standard departure and arrival route does come within—come under NEPA and will require an environmental impact statement henceforth.

My view now—our view is that this is retroactive, according to some recent court rulings having to do with the AEC, and we would like to see the whole thing reviewed.

I would like to recommend this to other people, other jurisdictions around Los Angeles and up to Seattle, call this to your attention that now many FAA actions do come under NEPA.

The next matter has to do with the State Division of Highways and our problem with the freeways. Freeways in the Peninsula were put over through town with the last four or five years over the protests of the—of the towns and the citizens, usually with some assurances from the State that things wouldn't be too noisy after all and, besides, that they would do something to see that it was all right. I have in this bundle of papers that I have given you a couple of letters from the State Division of Highways which, in essence, says that nothing can be done by the State Division of Highways to build buffers to help people where the freeways have been already put in. It's our view that the damage has been done by the Division of Highways and the Department of Transportation; that some money ought to be made available to build buffers to protect people who live along the freeways.

Finally, and last, the motorcycle-minibike-truck problem is a bad one. As a matter of fact, from all that I can tell in my town and in—along the—around the Peninsula, it may very well be the worst problem. The reason is this. The noise levels are extremely high for these unmuffled vehicles. They do get up around 80 to 90.

The second reason is they are so omnipresent. They are on all kinds of roads—the freeways, the expressway, even the little off-highway paths. We in the town have tried, through official channels, to get some control of this because the noise levels clearly violate the California State statutes. The muffler statutes are being violated and so also is the Noise Statute. Without going into the noise one, which requires a little—requires some expertise to measure, but just concentrating on the muffler statute, let me tell you what's happened and you will see what the problems of the towns, the whole jurisdiction, are.

Discussions with the enforcement officers—the patrolmen, the Sheriff's office—in some jurisdictions elicits the fact that they are very reluctant to cite for violations of the muffler ordinances for a very simple reason. When they get into the courts, in Santa Clara County at any rate,—not in San Mateo, but in Santa Clara County—these citations are written off on evidence of a correction of the defect. In other words, all that has to be done is correct it, get it down to a policeman, have him certify it, and there's no fine, no anything else. The problem is, of course,—as obviously people on the panel here know—that it's very easy to make a muffler which is defective a minute ago—all right—either by slipping on a new muffler or by flipping a little switch so that the cure is quite simple and the discure is also very simple.

Well, with that thought in mind, some of the Councilmen and I went to see the Municipal Court judges and asked for their help on this matter. Could they please change their bail schedules so as to impose a fine, and we found a reluctance to do that in Santa Clara County because they felt that equipment violations were—were the sort of things that really called for cure and not for—for fining. They did suggest that—that the disturbing-the-peace statute be used, but we haven't. That seemed a little drastic to me, but we may have to look into that.

So at this stage of the game we are stopped. That doesn't mean that we are permanently stopped; it just means that we are stopped at the moment. Sooner or later we will work things out. You might keep this in mind: that the local enforcement practices are part of the problem.

I think that's all I have to say. Thank you very much for your time. It's a pleasure to be here, and I appreciate all your work.

Dr. DIETRICH: Thank you. I hope that you will answer a few questions that the panel might have.

Dr. EVANS: Thank you.

Dr. DIETRICH: May I start at my right with Mr. Baron?

Mr. BARON: You raise an interesting point, and that is there is some discussion in the enforcement of the noise law of whether it should be taken out of the criminal law and put into civil law, whether it should be taken away from police and put in to special noise abatement enforcement people. So that it is very important for us to be reminded of this problem of the attitude found in local courts towards—especially in lower level courts—towards noise offenses. It seems to be pretty typical around the country.

I am glad that you brought up the point about dB(C) because it is true that the dB(A) has been shown in the literature to be a—to show a strong correlation with a number of measurement techniques, but it is also true that it is in a sense misused when applied to high or relatively high noise levels, because it does weight against low frequency noise, which you pointed out is extremely disturbing. And I appreciate that point being made.

But you do find that the combination of A and B solves the problem.

Dr. **Evans**: As far as I can see, it's an adequate way to do it, and relatively inexpensive. Meters are available which make it possible to make the measurements.

Mr. **Baron**: The point you made about the complaint surveys or measurements of complaints, I happen to agree with you that the technique is—is subject to a lot of research. And I was just wondering if, for the record, you could in just a few sentences state your critique of the complaint form or complaint evaluation used by the Highway Department, because this is a very important point.

Dr. **Evans**: I—I have just, within the last couple of days, found the source of the—of this thing, which is what the Highway Department has been using as its criterion for—when complaints occur, too. To get it—It had been quoted in many—in many documents, in County Departments of Public Works, and elsewhere, and I could not figure out where it came from. So there was no acknowledgment.

So I finally wrote to the State Division of Highways saying that I had heard this—this was it, and could he please put me in—in line of getting it. And he did that. And the thing came from a 1968 California Highway Transportation Agency, Division of Highways report by Mr. John Bateman and Louie Bircher at an annual meeting of the Highway Research Board. And I told—also told them that I would like to have an opportunity to go up to Sacramento and see where their data came from, and they very graciously have written back and said they would be glad to talk about it. I got that a couple of days ago. A quick glance tells me that I don't see how they got their data yet.

Mr. **Baron**: This is one of the things that I believe we will have to address ourselves to, is an examination of what the sources for a lot of these things are which have been accepted without question all these years.

Dr. **Evans**: Exactly.

Dr. **Meyer**: I had to respond to this phone call and I didn't hear the discussion, but let me echo—and there has been so much of this truth by assertion—

Dr. **Evans**: Precisely.

Dr. **Meyer**:—that many of these things become accepted just because they have been asserted so often. Some very distinguished workers in the field made a statement which, in the context it was made, was probably correct, that noise levels have been raising a certain amount each year. And some predictions were made, based on that, if they continued. Yet when you go back and read what they really said, it wasn't quite what it has been turned into. And so these things get repeated often enough that they are just asserted as absolute fact.

So I certainly want to reinforce this one as being a very important thing.

Dr. EVANS: Mr. Baron, I want to make a quick comment to your first one. I didn't mention it, but at the Stanford Law School I have a little project going on to look into this project of enforcement of the statutes that have to do with noise and to work out possible alternative methods, since the ones that we have don't seem to be working. So in a few months perhaps we will have something.

Dr. MEYER: Any other questions, Panel?

Mr. HILDEBRAND: I wonder if you could briefly describe your measurement procedures, or tell us if they were exactly the same as those of the—used by the State Highway Department. Your figures are—are quite different, and I am suggesting that it might be because the testing procedures were different.

Dr. EVANS: Well, the—I think they aren't too different because, on the occasions when they have been together and measuring the same thing, it came out about the same.

First of all, the noise meter which I used is the—is the Towne Noise Meter, which is a general radio instrument and is calibrated so that care is used. It's a little gadget about that big (indicating), easy to use. Obviously it does not do anything except measure dB(A), dB(A) and dB(C). That's all. It's lower—its got a 50 dB(A) setting and then a scale that goes down about 15 below it.

I have stood at the side of some County Engineers with their instruments and with this, and we—and we come out about the same.

Now, when you say they are different, could you refer me to the page here? Maybe I can reconcile. Or are you talking about my comments right now?

Mr. HILDEBRAND: Your comments. You said your results showed complaints at 45 decibels, whereas the 70 decibels—

Dr. EVANS: I told you that I don't know where the Highway Department got its statement. I can tell you where I got mine because of the—of my role in the town as the head of the Noise Abatement Committee and my role in the Sierra Club in a similar sort of role. I get coming in to me all kinds of complaints. People write me letters. I put one in the record I got that has to do with motorcycles and the difficulty that the person has. Miscellaneous complaints of all varieties come in to me.

So what I do when I have a bunch of them, I will go out to the place and I will find out what's—what's bugging them. Sometimes you will get a—places where it's really pretty loud. It's up there around 70, the background; 68 or 70. Sometimes you will find places where the level is—the background level is 45. They don't like the background level either, and particularly they don't like these pulses that come by.

So all you have to go on there is my say-so that I have been there. Only you notice that I didn't put any addresses in my data here, perhaps for reasons obvious. There are attacks on people oftentimes who—who complain one way or another. And they look to me to protect them.

Mr. **Hildebrand**: You are right on that point. Do you think it's a valid statement to assert that people are willing to call you at a decibel annoyance of 45, whereas they are not willing to call the Highway Department unless it gets up around 70?

Dr. **Evans**: Speaking for the Town of Los Altos Hills, first I say that certainly is true, mainly because when the freeway was first put through that causes so much of the trouble in that town, there was a lot of activity, petitions, letters, delegations to Sacramento, to try to do something, all of which came to naught and elicited letters like the—the 1969 letter which you have in your packet there. Therefore, people on the whole are extraordinarily skeptical of the Division of Highways. If it wants to recoup, it's going to have to overcome some barriers that's there.

So the answer in the Hills is, yes, indeed. They certainly will let us know, and the other people on the Committee.

As far as extending that further, it could very well be that they will call me. I have had calls from people in San Bruno, Palo Alto, San Jose. Maybe they see a sympathetic source there. I don't know why they call me, but they do, and they write me letters.

Mr. **Hildebrand**: And I would like to reiterate a point which I think you made, and that is the EPA must confer, or should confer, with citizens' groups to get a full picture of survey results, and I think we can—might add to that that perhaps, based on your testimony, the EPA should also consult with municipal court judges.

Dr. **Evans**: Oh, yes. Oh, that certainly would be helpful.

Mr. **Hildebrand**: Thank you.

Dr. **Evans**: Thank you.

Dr. **Plager**: No questions.

Dr. **Meyer**: Fine. Thank you very much.

Dr. **Evans**: Thank you very much, Dr. Meyer.

Dr. **Meyer**: I must say one thing. Again, this is evidence of the fact of all of their frustrations in dealing with government. It proves that when people really want to get organized and back up what they are doing with facts, and work at it, changes can be made. I happen to be aware of the recommendations and the complaints that you made regarding the FAA traffic changes. In fact, I was consulted by people from the FAA about that particular letter, and felt very strongly that you had a very good point. And it just shows what informed, responsible citizens can do even if they get frustrated at times.

Dr. **Evans**: Well, in that case, I would like to take the opportunity to thank you from the Town of Los Altos Hills officially on behalf of the Mayor, Dr. Meyer.

Dr. **Meyer**: Thank you. We are most pleased to have your appearance here, and I am sorry that you have to rush off to something perhaps that may not be as pleasant.

Go ahead, sir, now with your portion of it.

STATEMENT OF WILLIAM BURTIS, CALIFORNIA SOCIETY OF PROFESSIONAL ENGINEERS

Mr. WILLIAM F. BURTIS: Thank you, Dr. Meyer.

First of all, I would identify myself. I am William F. Burtis. I work for Lockheed Missiles and Space Company down in Sunnyvale, and I am representing a volunteer group of men who have some scientific bents and skills. And we are a volunteer group working for the City of Mountain View, and we are conducting at the present time a study on noise and its effect in the town.

Now, we are still in the developmental stage of our study, and we expect to begin our field measurements actually next week. So I will pretty much confine my points here this morning to telling you what we hope to accomplish and try to answer any questions that you have.

Incidentally, on the way up to the hotel here this morning from Union Square, I jumped on with my colleagues a trolley car that says, "Go to the Jack Tar Hotel." And from Union Square up to Van Ness here, he rang the trolley bell all the way up. So I am in a good mood to talk about noise abatement at the present time. No offense to the Jack Tar; I guess they were just trying to get publicity.

At any rate, back in April of this year the City of Mountain View, having heard about our volunteer group in Lockheed, asked us if we would be willing to give them consulting and advisory service on a program that they began in the spring of this year entitled "SEARCH." Now, it's—really what it is in a series of good, old-fashioned town hall meetings that I think some of you men and women know about that they used to have years ago, and they have been conducting these meetings at different locations throughout the town since April.

Now, they don't have one every night, but they have been doing this specifically for the purpose of getting the ideas of citizens of Mountain View on the quality of life within the town that they would like to see. And they are taking testimony and statements and information, and anything, including a lot of criticism. As always there is always certainly that in public hearings, but the whole point of the thing is, before they update their general plan for the municipality, they want to have an updating process based to a large degree on the sentiments of the population. And I guess basically, Dr. Meyer, that's why you men are traveling around the country. So I see some parallel here between what you are doing and what the City of Mountain View is trying to do.

So, at any rate, we agreed to stage this group and Lockheed agreed to work with the City on a volunteer basis and see what we could do to help them. We began to monitor the Town Hall meetings, and we did some critique work on the style of the meetings and how we thought they should conduct them. They had asked us for our opinions on that, and we offered them. And then they asked us as a follow-on effort to see if we would be interested in conducting a study of noise itself, the effect of noise on the quality of life in the Town of Mountain View.

So we said "yes." Or at least, after consulting with my peers in my group, we agreed, yes, we would take this on and see what we could develop. So we have formulated a plan, and I would like to just briefly tell you what we hope to accomplish.

First of all, the Town of Mountain View—I guess I really should call it a city. It's an urban metropolis town here on the Peninsula of about 50,000 people in the town. It's cut in a number of ways by major freeway networks. It is bounded on three sides by other urban metropolises, and on the fourth side by the Bay, and by the Federal Moffett Airport. So that does give you a picture of the town.

What we are going to accomplish, hopefully, is to measure the ambient noise level through a series of tests at specified locations throughout the town. And at each test station we will be running a continuous run for a 24-hour period with our equipment. Then we will pick up and move to another location. So we are going to have a picture, you might say, of what has happened at each particular location over the 24-hour period of time.

Then we will do some analytical work and, from the testing, we will devise what we have elected to call a noise map, if you will. Visualize a topo map, if any of you people understand what I am referring to. We hope to take the data on noise, and we are using metering equipment and we are going to operate at the dB(A)—in the dB(A) level, and we will take the ambient measurements of the sound amplitude and we will plot it graphically across a city map. And we are going to project contour lines throughout the city. In other words, we are connecting the different locations and the data that—that we get there, and we hope to present the City with a map which will represent the levels of sound throughout the city. And we intend to construct a map for the daytimes, and a second map for the nighttime.

Now, we don't intend—I have already had people calling me, telling me what they feel is a good level, and this is common. I realize all of you know that, but at this point I am not prepared to tell you what I think a good level is. If you ask me, I could give you my own opinion, but I wouldn't be representing our committee—group yet, and I feel that I must reserve that for until we complete our study.

Are there any questions that you might have?

Dr. **Meyer**: First, I would like to say that this is a most interesting approach. As I gather, this is a non-profit group of individuals? This is a company-sponsored activity? It's an industrial organization with a company-sponsored activity to provide assistance and help?

Mr. **Burtis**: May I make a comment on that, Dr. Meyer?

Dr. **Meyer**: Yes.

Mr. **Burtis**: Just a point of clarification. The Company, first of all, endorses what we are doing. They're fully aware of it. They are behind us 100 percent. The group of men—we call ourselves SAGES. We are not really sages; I have been kidded about that.

Dr. **Meyer**: Nothing wrong with that.

Mr. **Burtis**: It's an acronym, it stands for Scientific Advisory Group for Environment and Service. Boy, what a mouthful!

At any rate, we are a wing of the Lockheed Management Association, which is a non-profit management group of people at the Company, and we are a part of the community-oriented wing, if you will, of the Association. And our prime motive is to offer our services gratuitously to public agencies, municipalities, and non-profit groups in a problem related to the environment.

Dr. **Meyer**: I think this is a tremendous thing for your group to be doing, and we will be most interested in getting the results of this study and using it.

And it's rather intriguing also that one of our consultants that's working with us on this report to Congress came up with a coding system identical with your green, blue, orange and red one. He happens to be a representative of the Central Institute in St. Louis, who is doing some work under the National Research Council. All the numbers are a little different.

All that being aside, I would like for us to get this, for it will be most useful. I'm sure another one of our participants, who will be here shortly to talk, and who is also working with us on the report to Congress, will be interested in this input, because it happens to be an area of concern for us. All I can say is, this is a highly commendable and worthwhile activity which ought to set the stage for how things like this can be done elsewhere.

Panel, any comment? Sheldon?

Dr. **Plager**: One thing I wanted to be sure I understand. There's another dimension to this in addition to the one that our Chairman so well pointed up. I have a feeling, if I understand you correctly, that the focus of your efforts is less on health safety and welfare in those kinds of traditional legalistic sort of terms, but more in terms of the life style of the community?

Mr. **Burtis**: Yes.

Dr. **Plager**: And the life style of the world in which the people in those communities choose to live.

Mr. **Burtis**: You are very perceptive, Mr. Plager. That's correct.

Dr. **Plager**: Do you see this as a viable kind of concept, as a useful approach into the—to this problem of noise pollution, and, if so, how do you see that—them relating, for example, to the federal role in standard-setting and enforcement practices?

Mr. **Burtis**: I appreciate your thought there, and we are not totally ignorant of the idea of health. I think I mentioned in the back end of the article there, or in my paper, that we are doing some research, trying to probe into the physiological and psychological effects, but we are mainly concerned with life style and, in fact, when I talked originally to the City Manager of Mountain View on taking this study, he was stressing to me the fact that they honestly and seriously were concerned, the city management people were, about what the citizens really wanted for the quality of the environment in Mountain View. So that affected—that sort of set the tenor, if you will, for our approach. And I guess while we are not stressing the idea of the health, physical health, I think you have to think of—I am thinking mainly of an aesthetic health and peace of mind primarily, and we are trying to stress that area.

I realize you have to consider from your viewpoint basic needs or for health itself. I think that's what you are trying to tell me, isn't it; health requirements?

Dr. Plager: No, to the contrary. I guess I am trying to highlight the very fact that we ought not to get too hung up or too limited in our perception of the problem, and we ought not to limit our concerns, it seems to me. I get the sense of it from what you are trying to do that it would be a mistake for the Federal Government or the State Government to limit itself to the concerns—

Mr. Burtis: Yes.

Dr. Plager:—to the concerns just for health or welfare in traditional terms.

Mr. Burtis: Yes.

Dr. Plager: But we have got to find some way in the system to encourage and support your kind of efforts.

Mr. Burtis: Yes, I would appreciate that very much, if you would take that into consideration in your work, because peace of mind—a person can be healthy physically, but if he actually becomes neurotic because of his personal concern, and if there are enough people who feel this, then it does present a problem. And you can—You know, you can tell them all day long, "Forget it. It really isn't a problem." But if it is to them, it really is a problem. At least this is how I feel about it.

Mr. Baron: I happen to agree with you on that point of view. The aesthetic values, the quality of the environment, is not stressed enough. We get too bogged down in some of the minutiae of what is the problem.

How many test locations are you using?

Mr. Burtis: Twenty.

Mr. Baron: And you say they are in buildings?

Mr. Burtis: We will be located—The nature of our equipment, we are moving it around and we are going to house it within either school buildings on fire houses or public buildings as much —plus some homes, and the idea of having it indoors is not to bias our data, because we have it adjacent to the open window. We have a window that would be open and the input on the meter is not being biased by being closed up.

As you know, if you get behind a wall, you can do so.

Mr. Baron: You will maintain a certain height?

Mr. Burtis: Window height.

Mr. Baron: No, no, I mean in terms of the microphone.

Mr. Burtis: The microphone is at—right adjacent to the window.

Mr. Baron: Ten feet, second story, third story, 10 feet?

Mr. Burtis: I am sorry, Mr. Baron. You mean above the ground?

Mr. Baron: Right.

Mr. Burtis: Above the ground, about six feet above the ground.

Mr. Baron: Thank you.

Mr. Burtis: You are welcome.

Dr. Dietrich: I have a non-technical question related to measurement. First, just an observation. I think you have done a very impressive thing here, and I have just wondered whether you plan statistical analysis of the noise level that you get from the tapes, other than just peak and mean?

Mr. Burtis: Well—

Dr. **Dietrich**: I don't mean to force you into any elaborate explanation. You can answer "yes" or "no," if you please.

Mr. **Burtis**: I will be crucified by my peers if we go too far. We are still in the developmental stages on this, but we do feel in the beginning we will be working with—we are trying to capture the ambient level over an extended period of time in each location, and then our equipment is of such a nature that we can do analytical work at a later time. But I also commented in there, I believe, that we are not on a Hawkshaw/I-spy operation at the present. If we are going out to capture a noise source, that would be a follow-on effort.

Dr. **Dietrich**: I understand. The reason that I have introduced that question is, I was going to ask you with respect to the role of the Federal Government whether you haven't, indeed, hit on a very fine thing with this what I call self-help project for your community, and whether the Federal Government might not provide some assistance in the sense of setting some kind of measurement for analysis guidelines, so that data collected by your project and other projects throughout the country might not fall in a common format. I am not forcing—

Mr. **Burtis**: I see.

Dr. **Dietrich**:—a conclusion on your part. In fact, one of the things I think we would want to do is find out what you say to your community's responses to the numbers of the noise. But would it not be useful perhaps to make sure that the way those numbers are collected is common in several communities?

Mr. **Burtis**: Right. If this morning, for example, you presented me with a form and said, "Would you be willing to document your data along these lines," I would say, "Yes, I would be happy to." Because in my mind I think I would see a more precise relationship between what we are trying to do and what you are trying to do.

Dr. **Dietrich**: I have reference to some very becoming standardized statistical descriptions for noise levels. Very good. Thank you very much.

Dr. **Baron**: I notice this is related to the California Society of Professional Engineers, this testimony.

Mr. **Burtis**: Yes. We were—Well, I was invited, and I believe you were invited also, Doctor, by the California Society of Professional Engineers to present the testimony as to what is going on down in the Peninsula area.

Mr. **Baron**: I think this is most commendable that the Professional Engineers in this area have gotten involved in noise abatement.

Dr. **Evans**: Could I thank Dr. Norman Berger, who is the Professional Engineer member who got us together? He didn't speak up and introduce himself, but he is really responsible for our being here.

Dr. **Dietrich**: Thank you very much.

Our schedule next calls for Mr. Scott.

Dr. **Meyer**: All right, I apologize for having to respond to a call that required my temporary absence for a minute or two. We will now get to the point of a little bit of discussion of some of the problems of standardization, so if you will proceed, sir.

STATEMENT OF WILLIAM SCOTT, SOCIETY OF AUTOMOTIVE ENGINEERS

Mr. **William Scott**: Fine.

Dr. Meyer, Members of the Panel: I appreciate the opportunity to be here today. My name is William Scott. I am Chairman of the Vehicle Sound Level Committee of the SAE, the Society of Automotive Engineers. Since the SAE is one of the major standard deriving groups in this country, we thought it would be appropriate for us to inform you of the nature of our organization and the activities of that organization in the noise standards field. Many of you here, of course, are already familiar with the SAE and, indeed, know that we are an organization of some 25,000 engineers and 4,000 student members.

"The object of the Society is to promote the Arts, Sciences, Standards and Engineering Practices connected with the design, construction and utilization of self-propelled mechanisms, prime movers, components thereof, and related equipment.

"The principal means for accomplishing this object shall be the holding of meetings for the presenting and discussion of engineering papers, the developing of technical reports including engineering standards and recommended practices, and the publishing and distributing of such papers and reports."

The single common denominator that ties together the Society membership and its activities is self-propulsion. Any vehicle that moves under its own power falls within the Society's province. Today the SAE standardization activities cover passenger cars, trucks and busses, farm and earthmoving machinery, airplanes (from helicopters and personal aircraft to jet transports), and space vehicles, as well as the materials and components that go into these vehicles.

PRINCIPLES AND POLICIES

During the more than half century of SAE standardization work, certain basic principles have continued as strong guiding factors. The principles form, define, and strength the Society's work on standards. Here they are:

1. *Limited to Engineering problems*

SAE restricts its standardization work to technical and engineering problems. To be suitable for SAE understanding, a technical problem must lend itself to cooperative attack and must not impinge on the design or proprietary prerogatives of a manufacturer. The Society steers clear of standardization problems involving trade matters, seller and customer relations, and similar activities not directly or completely involving technical considerations.

The men whose wisdom conceived and established the SAE's standards organization years ago foresaw the need for maintaining a strong technical stature. They felt—as our officers have continued to feel through the years—that there are more appropriate organizations, better equipped than SAE to promote laws, regulations, and political objectives, even though some of these matters may relate to technical standards needs.

2. *Technical Competence the Prime Requirement*

The Society picks for its technical committees the leading engineering specialists in each given group's interest area. Membership in these committees is not restricted to SAE members, nor to engineers, for that matter. In short, the Society seeks out and appoints to its technical committees the most competent men who can contribute to the solution of the problem at hand.

3. *Individual Membership—Not Company Representation*

Members of SAE committees serve as *individuals*, not as representatives of the companies or organizations that employ them. Long experience has shown that, as individuals, engineers working on a committee project can come closer to achieving the soundest technical objectives. That's because they can arrive at the best engineering solution to a common problem, unhampered by the special interests of the companies or organizations with which they are affiliated.

Working as individuals, SAE committeemen do not commit their employers to the technical decisions reached by their committees. Government agencies, as well as industry groups, find this an important concept. We are told that this is one reason why SAE standards are more readily acceptable to Government agencies and industry groups than those of trade associations.

Because this principle is so important in SAE's operations, each man invited to serve on an SAE technical committee receives a letter of invitation quoting the following rule from the SAE Technical Board's Rules and Regulations:

> "*RESPONSIBILITIES AND QUALIFICATIONS OF MEMBERS:* In discharging their responsibilities, members of the Board, Councils and Committees, function as individuals, and not as agents or representatives of any organizations with which they may be associated. Members are appointed on the basis of their individual qualifications which to SAE technical committees enable them to contribute to the work of these committees."

4. *Voluntary Usage*

The output of SAE technical committees, when released, is made available for anyone to use or accept voluntarily. There is no compulsion for any individual or organization—be it industry or Government—to use SAE standards. An SAE standard may be voluntarily used by a buyer wishing to stipulate his needs to a supplier. It may be voluntarily accepted as a part of minimum safety practices of a Government regulatory agency. It may also be voluntarily accepted by the Department of Defense in its aim to simplify defense logistics or supply.

Each standard, recommended practice or information report listed or published by the Society carries the following note:

> "All technical reports, including standards approved and practices recommended, are advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. There is no agreement to adhere to any SAE standard or recommended practice, and no commitment to conform to or be guided by any technical report. In formulating and approving technical reports, the Technical Board, its Councils and committees will not investigate or consider patents which apply to the subject

matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

5. *All Concerned Have a Voice*

Reports of committees recommending the approval of a standard or recommended practice represent a consensus of those substantially concerned. Proposed documents are given broad visibility to all with any interest in the subject, so as to receive their suggestions.

STRUCTURE OF SAE STANDARDS ORGANIZATION

The SAE Technical Board has been designated as the body responsible for carrying out all of the cooperative engineering activities of the Society, including standardization. Its organization has been changed from time to time to satisfy changing technical needs.

In recent years, the Board has delegated authority to five operating Councils for approving the hundreds of technical reports and standards coming annually from scores of specialized technical committees under the various Councils. Under the five Councils work some 4,500 engineers, serving on more than 400 technical committees.

These Councils establish technical standardization policies and practices in their special area of interest. Under each Council is a subordinate organization of working committees, each with a specific assignment.

The Councils themselves cover:

1. Aeronautics and space.
2. On-highway ground vehicles, their components and accessories.
3. Off-highway ground vehicles, their components and accessories, including recreational vehicles.
4. Engineering materials and processes.
5. Miscellaneous standards.

In this organization, the Technical Board is the broad policy-making body, which also adjudicates any conflicts, should they arise. It also details the relationship SAE maintains with other technical standardization organizations.

RELATIONSHIPS WITH OTHER ORGANIZATIONS

The Society has enjoyed close relationships with a number of associations directly or indirectly involved in the several vehicle engineering fields. These include trade associations (such as the Automobile Manufacturers Association and the Aerospace Industries Association), professional groups (such as the American National Standards Institute and the American Institute of Aeronautics and Astronautics), and military and governmental agencies.

The Society's association with the Automobile Manufacturers Association and the Aerospace Industries Association is that of assisting these associations in satisfying industry's technical standardization needs. This includes the development of standards, as well as the development of technical recommendations which might be submitted to the Government.

SAE's relationship with the American National Standards Institute is one of sponsorship. As a Member Body of ANSI, SAE, in its recognition of the many across-the-board standardization needs in industry, is pleased to be a part of ANSI.

The SAE, jointly with the American Petroleum Institute, sustains an organization known as the Coordinating Research Council, which was established over 20 years ago for the purpose of doing cooperative research work in the mating of power plants to fuels and lubricants needs.

The Society, in its standardization effort, frequently uses technical help from other organizations, the American Society for Testing and Materials being one. For example, in the SAE material specifications, it is common to require test methods in accordance with ASTM-established requirements.

Close contact is maintained between SAE technical groups and Government agencies, including the Department of Defense, Transportation, Health, Education and Welfare, and others.

LEGAL ASPECTS

Whenever competitors get together for their common good, it is likely that Government agencies may view such a get-together as a possible restraint of trade. Sae has been fortunate in being able to carefully limit its technical committee operations to engineering requirements, aiming such requirements at safety, improved logistics, or similar broad objectives, and has considered its actions as appropriate and needed by industry and the Government.

As noted above, all of the committee decisions are determined by individual recommendations of committee members. The reports and standards generated are made available for voluntary acceptance.

LOOKING INTO THE FUTURE

There is evidence to indicate that as competition gets keener standardization will be needed more and more. Further, through the work of committees, it is possible to streamline communications in the exchange of technical information in industry and Government. The rapidity with which new technology may become useful depends, in large measure, upon our ability to exchange technical information. SAE committees and the standardization efforts coming out of these committees play an important role in this effort.

The Society looks to a growing standardization program. It is anticipated that in the next decade more attention will be given to international standardization, where SAE looks to ANSI as the United States channel of contact. Vehicles which were previously manufactured and used on one continent are now a common commodity of international exchange.

One of the most fascinating areas of future standardization possibilities is related to the determination of relationships between the human operator and his vehicle. A better knowledge of human weaknesses, limitations, and endurance will be needed to more specifically define equipment requirements.

SAE looks ahead to the continuing fulfillment of its standardization goals on an even broader base and in greater depth than ever before. We will continue to tailor our standards operations to expressed needs of reputable technical groups in the areas we serve.

NOISE STANDARDIZATION

SAE has been the leaders in establishing vehicle noise standards, dating back to the Fifties when SAE established a sound level standard for heavy trucks and buses. In 1961, SAE established Committee A-21, Aircraft Noise Measurement. This committee has been the forerunner in establishing standards for measuring and predicting aircraft noise. The current FAA regulation for certifying aircraft emanated from work done by SAE in originating the concept called effective perceived noise level. This committee continues to provide the active leadership for both domestic and international standardization in aircraft noise. Constantly looking ahead, this group has completed the following documents:

1. Measurements of Aircraft Exterior Noise in the Field—ARP 796.
2. A Technique for Narrow Band Analysis of a Transient—AIR 817.
3. Methods of Comparing Aircraft Takeoff and Approach Noises—AIR 852.
4. Definitions and Procedures for Computing the Perceived Noise Level of Aircraft Noise—ARP 865A.
5. Standard Values of Atmospheric Absorption as a Function of Temperature and Humidity for Use in Evaluating Aircraft Flyover Noise—ARP 866.
6. Jet Noise Prediction—AIR 876.
7. Determination of Minimum Distance from Ground Observer to Aircraft for Acoustic Tests—AIR 902.
8. Method for Calculating the Attenuation of Aircraft Ground to Ground Noise Propogation During Takeoff and Landing—AIR—923.
9. Frequency Weighting Network for Approximation of Perceived Noise Level for Aircraft Noise—ARP 1080.
10. House Attenuation of Aircraft Noise Data and Average House Noise Attenuation—AIR 1081.
11. Evaluation of Headphones for Demonstration of Aircraft Noise—AIR 1115.

Under current investigation are:

Helicopter and V/STOL Noise
Airplane Flyover Noise Analysis System Used for Effective Perceived Noise Level Computations.
APU Noise
Interior Noise
Comparison of Ground Runup and Flyover Noise Levels.
Acoustic Effects Produced by a Reflecting Plane.
Recommended Procedures for Presenting and Measuring Aircraft Noise in Testing of Human Subjects.
Effective Perceived Noise Level Determinations by Direct Subjective Judgment Test.
Aircraft Noise Research Needs.
Refinement of Procedures for Developing Aircraft Noise Exposure Contours Around Airports.
Use of Aircraft Noise Exposure Information in Land Use Planning.

The above represents a rather extensive program and is being moved along as rapidly as possible, including the conducting of research where necessary. In the surface vehicle area, the Society has a similarly ambitious program.

There are ten published standards and/or recommended practices currently published by the Vehicle Sound Level Committee regarding surface vehicles. We will briefly review these documents. Five are concerned with exterior noise, two are about warning devices, two discuss interior noise levels, and one is concerned with instrumentation.

SAE J672a, *Exterior Loudness Evaluation of Heavy Trucks and Buses*, is the latest version of the very first SAE ground vehicle noise standards. It was developed by an ad hoc committee of the Motor Truck Committee of the Automotive Council of the SAE and published in 1957. It was intended for use of vehicle development engineers so that they could determine the maximum noise-making capability of a heavy truck or bus. The test procedure calls for recording the noise of passing vehicles operating at constant speed in its maximum noise condition at less than 35 mph. A grade in the test site or a towing dynamometer are required. Octave band levels are determined from the recorded data and converted sones. The number of sones for each band are summed to give the final value. The "generally accepted" total indicated in the document was 125 sones.

This procedure is similar to the process the vehicle development engineer uses when working on the vehicle, but is obviously cumbersome as a communication device or checking method. Consequently, another procedure was developed.

SAE J366, *Exterior Sound Level for Heavy Trucks and Buses*, is a recommended practice published in July of 1969. As in the following two road vehicle noise test procedures, the vehicle is accelerated through the special test site so as to reach a maximum rated engine speed at wide open throttle when the vehicle is in the proper location with respect to the microphone. The test site is an open area, free of reflecting surfaces, with pavement in the measurement area. The microphone is located 50 feet from the vehicle center line and four feet above the ground surface. The transmission gear ratio is selected so that the vehicle will meet the engine speed range requirements, not exceed 35 mph, and reach maximum engine speed at the correct location. The point at which wide-open-throttle acceleration is initiated is varied if necessary. The 35 mph maximum speed is specified to prevent tire noise from being a major contributor. The maximum A weighted sound level is reported.

SAE J986a, *Sound Level for Passenger Cars and Light Trucks*, is similar to the Heavy Truck and Bus Recommended Practice just described, except that adjustments in the starting point are not required and no maximum vehicle speed is specified. All vehicles start wide-open-throttle at the same point and with the same initial vehicle speed. J986 preceded the Heavy Truck and Bus standard chronologically and, therefore, was the first procedure to describe the test site now used in each of the road vehicle procedures. It was also the first procedure to indicate maximum level measured on the A scale of the sound level meter.

The recommended practice, SAE J192, *Exterior Sound Level For Snowmobiles*, is again a wide-open-throttle acceleration type of test, but with a variation which makes it easier to measure maximum noise. The vehicle is first accelerated along the test path from the projected microphone position until it reaches maximum engine speed. The point at which max. engine speed is reached is noted. A starting point for a run in the reverse direction is determined from the maximum speed point. The vehicle's position at maximum engine speed for the test is thus the same for all vehicles, but the starting point is unique for each vehicle. Because of its simplicity and applicability to a wide range of vehicles, it is reasonable to expect that future road vehicle standards and recommended practices for measuring maximum noise will use this scheme.

We have reviewed these documents because they have been cited in some legislative acts and regulatory codes and, therefore. are of the greatest interest. We have already sent you copies of each of the published recommended practices and standards of the SAE Vehicle Sound Level Committee for your review. The others are:

SAE J994, *Criteria for Backup Alarm Devices*,

SAE J377, *Performance of Vehicle Traffic Horns*,

SAE J919a, *Sound Level Measurements at the Operator Station for Agricultural and Construction Equipment*,

SAE J336, *Sound Level for Truck Cab Interior*, and octave band level description of maximum interior levels; and

SAE J184, *Qualifying a Sound Data Acquisition System*, a procedure for determining if an acoustical data acquisition system meets the performance requirements specified in the standards and recommended practices.

The Vehicle Sound Level Committee is currently working on a wide range of documents. The list is growing rapidly and we are now reviewing our priorities. But here are our present activities:

A procedure to measure the noise of an engine as a component is being developed.

Another procedure is being developed to measure truck tire noise. This proposed procedure is being used in part already because of the growing interest in truck tire noise reduction.

A subcommittee is forming to develop a standard method of measuring truck auxiliary equipment.

A procedure for the performance of motor cycle horns is under consideration.

The evaluation of noise exposure at the operator's station for agricultural and construction equipment is the subject of a proposed standard.

Sound levels at the snowmobile operators' station will be dealt with in another document.

Two vehicle exterior test procedures are being considered; one for pleasure boats, and one for motorcycles.

Small engine powered equipment will be the subject of a standard, as will measurement of noise at a construction site.

The Vehicle Sound Level Committee is currently considering its first technical opinion report. This will be a statement concerning the Committee's opinion on some aspects of traffic noise reduction and a discussion of diesel truck noise.

Since it is the intention of the SAE to assist governmental agencies by producing reports of mutual interest, it is hoped that this review has been of value to the office of Noise Abatement and Control and that we can work together in the future.

Dr. **MEYER**: Mr. Scott, thank you very much. Although I have generally been aware of this, I must say that this recitation, along with your comments, provides a very important basis of some cooperative effort between SAE and our office. I think that with the following comments by the National Standards Institute, this will certainly give the public a picture of the great effort that has been going on.

Panel, any questions?

Dr. **PLAGER**: Yes. I, too, found this very helpful, Mr. Scott. As a non-engineer, working with engineers in the noise field, as well as others, I constantly find myself being referred to SAE J-something-or-other, and I have never really known exactly where they came from and what they were, and what the point of it all was, except it seems to be very authoritative. And it's that very point that I want to raise with you.

I appreciate really for the first time the focus of the SAE in terms of individuals functioning in their private capacity and the idea that the standards data from your organization are voluntarily adopted, and so on. But I am sure you must be aware —and I am sure your members are aware—that your group has, by perhaps its own efforts and its own worth, become a most prestigious engineer source of information to the—our country, to other engineers, and to Government and private industry. And, in part, also I am sure, because of the access to the expertise that your Society has, and that, it seems to me, raises a very serious problem for your Association—and perhaps you would address it—and that is that, while, indeed, your effort is to focus on technical material, implicit in your work and the work of your Association must be a number—are a number of important value decisions which affect the way in which society responds to certain kinds of problems.

For example, the choice of the kinds of things you look at your Association decides to issue standards on, for example. The selection of variables that a technical group consider relevant in the determination of a body of standards can affect very directly the way in which the Government, the way in which industry, responds to certain kinds of environmental problems. I wonder what—how sensitive is your Association to this, your Society? How sensitive is your group to this problem, and what steps, structural steps, or otherwise, do you take to insure that, with the close relationship that you must necessarily have with industry, your group does not become the captive of the very groups with which it has to work in light of this total impact that you have on our society?

Mr. **SCOTT**: Yes, sir. I understand your question, and it is a question that we face very regularly. There is no question but what a good many of our people, because, even, of the title of our organization, come from the automotive and related industries.

However, the way which we attempt to get around some of the problems—and I would not pretend that we are anywheres near perfect—but the general approach is to use large groups across broad lines, and our own committee is composed of people not only from the automotive industry, but from outside the industry and, of course, from a broad variety of people who are not all automotive. You know, boat people, marine people, and that sort of thing, as well as automotive people. And we have got people on the committee and we have acoustical consultants on the committee, so that we have a broad background of people on the committee. And with that kind of spread, of course it's very difficult for anyone else to overrule you, you know.

There is obviously some bias on everybody's part.

Dr. **PLAGER**: Sure. Has any consideration—and I realize this is kind of an emerging sensitivity that lawyers and engineers and other professionals have had to develop—is there any consideration being given to having public members on committees at a level in your group not dealing with the technical so much as with the kind of thing I was talking about, such as the selection of projects and the implications, identifying the implications of certain kinds of work that your group might take on?

Mr. **SCOTT**: The term "public member" must, indeed, be difficult to describe precisely. I feel like I am a member of the public myself, and certainly I am sure the other members of the committee do. It's hard to find somebody who isn't—doesn't have another title besides "member of the public." And we are, indeed, changing our look at priorities, and our committee itself right now is going through a reexamination of its priorities.

We feel we have missed the boat in some areas. We haven't responded to what other people would like. We certainly, in a time frame, you know, started out trying to communicate with other engineers. You know, how do we communicate with each other and, therefore, we need a test procedure.

Now, we noticed to broaden the outlook of who we need to talk to—and we have done that and are continuing to do that—so that we are now considering roadside surveillance kinds of procedures which we would not have done previously.

Dr. **PLAGER**: Fine. Thank you.

Dr. **MEYER**: Mr. Hildebrand?

Mr. **HILDEBRAND**: No questions.

Mr. **BARON**: Do you believe that the A-scale should be used in equipment above 55 dB? Wasn't it originally developed to be used below that so that it recognized sensitivity of the ear?

Mr. **SCOTT**: We are talking about road vehicles now?

Mr. **BARON**: Road vehicles.

Mr. **SCOTT**: Yes. Sure. I saw the demonstration yesterday of the A-scale, B-scale, C-scale, the kinds of limits they have, and it was not too long ago that I think I would have agreed with you that above some level it would be nice not to use a 40-sone curve, but at the same time, we have run and published quite a bit of data concerned with the people's response to the things they hear and how well that correlates with different techniques of measurements. The technique that comes out most often to correlate very well with people's response to road vehicles is the A-scale.

Now, you know, I can't understand that. If I was going to look at something, you know, in the 80 or 70 or even 60 dB range, you know, I would like that number to have a B after it. But it turns out that if you look at the correlation coefficient of people's response versus the various scales, this A-scale does a very good job. And for that reason, you know, we do support the A-scale and do use it in our documents.

Mr. **BARON**: I raise the question of degree of correlation of—What was the phrase used, correlation—

Mr. **SCOTT**: Correlated people's response.

Mr. **BARON**: Yes. With the various scales.

Mr. **SCOTT**: Right.

Mr. **BARON**: The noise, if I remember the literature, is above 90 in correlation coefficients. Is that correct?

Mr. **SCOTT**: Yes.

Mr. **BARON**: Is it statistically valid to give a lot of credence to a given system if it is above 90? Is that considered quite a bit of coefficient of correlation, anything falling in that range?

Mr. **SCOTT**: I presume you are suggesting that the B-scale levels correlate better?

Mr. **BARON**: I am not saying that. I am wondering if the A-scale is not given too much prominence without statistical validation. In other words, that the C is not that far away, possibly, from the A, if it falls in the 90 percent coefficient area.

Mr. **SCOTT**: There is a range of scales which for some investigations are performed reasonably close together and statistically you probably cannot separate them. Over the broad range of vehicles, people have looked at the A-scale and it consistently looks good. Other scales go up and down in their performance, so that is the only broadly-based scale that people can understand, is the A-scale.

Mr. **BARON**: Seems to be—You heard the testimony today from the California Society of Professional Engineers about the low frequency noise. That is disturbing. I forget the name of the community in California.

Mr. **SCOTT**: The jet airplane?

Mr. **BARON**: No, road, freeway.

Mr. **SCOTT**: I didn't hear that.

Dr. **MEYER**: She was talking about a prop-driven airplane, but there are some of those same rumbles associated with trucks and also some people hypothesize—and I am sure you are aware of this in SAE—that the turbine engine may be a powerful prime mover, and you may have to take a look at that.

Mr. **SCOTT**: That may be the case. It has not been considered up to this point. You know, the other side of that problem, Mr. Baron, is that acousticians typically in the past have responded to problems by creating a new unit. And we would like to avoid that and get on to solving your problem, sir, or helping solve it.

Dr. **MEYER**: I hope the witness who will follow from the American National Standards Institute will also have some comments on that plethora of approaches.

Mr. **BARON**: I am only trying to suggest that we pay attention to the low frequency as we are getting more evidence that we could. That's the point I am trying to get to.

The other question is: How long does it take to evolve a standard? Do you have any rough idea?

Mr. **Scott**: Given the particular difficulty, anywheres from a year to three years.

Mr. **Baron**: They are that rapid now? They used to take longer.

Mr. **Scott**: Your generation probably remembers more of this than mine does.

Mr. **Baron**: In my book—just for that—just for that, I am going to give you two quick citations from my book.

> "According to one experienced member of standards working groups, if a standards committee cannot arrive at a set of standards in the time in which one could get a good technical college education (5 years), then this group should resign. He believes there is no reason why standards cannot be set by two years from the time the working group is organized."

That's one point. The other point is, as far as the speed which the SAE moves in some of the standards, two years ago when I was in Seattle at a meeting on transportation noise, somebody from the SAE said, "Don't worry." He said to the Government, "Don't worry, we are moving full speed to work on various problems of noise and motor vehicles."

And I asked this question, and I said:

> "The automotive industry once told the City of New York it was setting up a committee to work on standards for the auto horn. That was in 1930. It is now 1969. Has the committee been formed and has it submitted its report?"

Now, what is interesting here is that the auto horn apparently was brought to the attention of the industry quite a few years ago, and I see now—and I would like to know what year that you have a performance standard for auto horns, and I think that's farily recent.

Mr. **Scott**: Yes. I will look, if you would like. I don't remember the year.

Mr. **Baron**: But I think it's within the last year or two.

Mr. **Martin**: Mr. Chairman, I feel in a somewhat delicate position here, but being with the SAE staff and having been involved in this for even more years in the SAE structure than Bill has in noise, let me comment on this, Mr. Baron.

The realization of expediting noise standards information has only been in the last 10 years, really. And in that period where possibly SAE standards in the field of noise have been generated quite rapidly in the period that Bill alluded to, there are other kinds of standards where data just isn't sufficiently available and SAE will not put out a document until sufficient data is there to validate it. We feel very strongly about the technical accuracy of our documents. When a document is published by SAE, there is no question to its accuracy, and this is very important.

We have, in other situations where standards were necessary, produced a standard in three months, if the data was available. If it was not, we would not publish it.

I think this is a very important thing. We are a technical society; we are not an industry. Nobody is paying our bills or giving us a contract with the deadline. We respond to a problem on the basis of data that's available and, if it isn't, we conduct research to obtain that data.

Mr. **BARON**: I think that some standards—the point raised by my colleague to the right is that what standards go into the hopper to be evolved and the length of time. Do you feel that the Federal Government should become involved in assisting?

Another point that he just raised is that most of this is volunteer work. I happen to belong to a standards-writing group myself, so I know something about it. Do you believe that the Federal Government or an agency like DPA or NEPA should be helping the voluntary standards societies to expedite the matters?

Dr. **MEYER**: Could I come back to one thing, though? I believe Mr. Baron did as a question about the horn. I notice there was no date mentioned.

Mr. **SCOTT**: The horn standard was published in April of 1969.

Dr. **MEYER**: April of '69.

Mr. **BARON**: I would only—For the record, I would like to point out that the problem of the horn was brought up at least in 1930.

Mr. Scott: Fine. The other side of that is, since July of '67 there have been nine standards published by the Vehicle Sound Level Committee.

Mr. **BARON**: Glad to hear it.

Dr. **MEYER**: Questions on the left?

Dr. **DIETRICH**: I have two questions, Mr. Scott. Both of them attempt to get a little closure on some things brought up by other witnesses.

With respect to the witness today who expressed some fears, I would like to ask you if you foresee—and I know I am asking you to comment on behalf of the entire committee and that's not fair. Do you foresee the need for developing standards for measurement that would involve "prohibitive costs"? I am thinking of for small mufflers such as in the auto parts industry.

Mr. **SCOTT**: Yes. I can't give you a committee position on that subject, and I am sure that's a subject which will require a great many compromises. And I am not enough familiar with the techniques by which we could get around the problem of the small manufacturer.

Dr. **DIETRICH**: Well, are we represented on your committee by someone with that kind of problem?

Mr. **SCOTT**: Some of them are. A good many of them are not part of the committee, though their associations are sometimes represented.

Dr. **DIETRICH**: Well, I would like to ask another question which has to do with an existing standard. Would you describe for trucks and buses—and we have had some testimony about some problems associated with motor buses—and I wonder whether your committee has taken under advisement or has taken any action with regard to suggestions by a State Department of Health toward a rather difficult kind of test which might involve a standard reverberant site and perhaps a closer-in position for the measurement, more typical of what you might get as a prospective passenger exposed to city bus noise?

Mr. **SCOTT**: That exact subject has not been dealt with yet, though that subject is on the list which we are reviewing in terms of our priorities. I would add, of course, that you can today use the heavy truck and bus test procedure to measure something very much like the maximum noise a bus makes accelerating away from a curb. Not at the same distance that people are at and not in the environment that the bus is in, but perhaps a relationship could be worked out between some standard environment, because a bus operates in a great range of environment.

Dr. **DIETRICH**: I understand. I wonder whether you might consider, perhaps, a correction for the environment if you didn't feel that a whole, entire, separate test was necessary.

Mr. **SCOTT**: The subject of a bus accelerating from a curb site, as I mentioned, is on the list of things to be considered. We have not approached that problem, though we recognize it as a problem.

Dr. **DIETRICH**: Thank you.

Dr. **MEYER**: Before we recess for a brief lunch break, is your group—and I hope anyone else will answer this, if they are—taking a look at this: Is any element of the SAE exploring the question of sirens and emergency warning devices? We are getting all sorts of complaints in our Agency about the proliferation of a wide variety of acoustical warning devices. Some of these, of course, are required by law. For instance, the backup alarm device on vehicles. I believe I did see that somebody's working on that. But what about the police siren, the ambulance and the rest of them? Is there any work at all being done or proposed?

Mr. **SCOTT**: We don't have a present activity for that type of warning device.

Dr. **MEYER**: I would hope that the ANSI folks, who are going to be testifying later would respond to the question and let me know whether that's so.

(Luncheon recess.)

AFTERNOON SESSION

Dr. **MEYER**: I now call to order the final sitting of the San Francisco Hearing on Noise. And continuing the discussion on information relating to standards, we have representatives of the American National Standards Institute, Mr. G. F. Hohn, and Mr K. M. Eldred. Mr. Hohn?

STATEMENT OF G. F. HOHN AND K. M. ELDRED, AMERICAN NATIONAL STANDARDS INSTITUTE

Mr. G. F. **HOHN**: Mr. Chairman, and Panel Members:

I am G. F. Hohn, Deputy Managing Director of the American National Standards Institute, a private non-profit organization incorporated under the membership corporation laws of the State of New York.

Appearing with me is Mr. K. M. Eldred, a member of the American National Standards Committee on Acoustics, S1, who will assist with questions relating to the standards activities in the measurement field.

ANSI IN BRIEF

The American National Standards Institute is a federation of leading trade, technical and professional organizations, government agencies and consumer groups. Its principal function is to act as a clearinghouse to coordinate the work of standards development in the private sector, which is current carried on by nearly four hundred different organizations. Through its procedures, competent, efficient, and timely development of standards is made possible, duplication and overlap are minimized, and a neutral forum is provided to consider and identify standards needs.

The Institute's Board of Standards Review determines the existence of consensus through provisions for public notice, review, and comment. This independent group, with balanced representation of industry, government, and consumers, offers democratic participation along with the practical ability to reach a conclusive determination of what properly constitutes a valid, voluntary American National Standard.

Through its recognition by such international non-treaty standardization bodies as International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC) as the national standards body of USA, ANSI serves as the focal point for organizing U.S. participation in international standardization.

ORGANIZATION OF ACOUSTICAL STANDARDS COMMITTEES

There are three standards committees operating under ANSI Procedures that have developed the bulk of American National Standards in acoustical areas of concern to this Panel. The work of these committees was started back in 1932 with the Acoustical Society of America as the Sponsor for all of these years. A brief summary of the scopes of these committees is as follows:

S1, Acoustics is responsible for standards, methods of measurement and test, and terminology in the fields of physical acoustics.

S2, Shock and Vibration is responsible for standards, methods of measurement and test, and terminology in the field of mechanical shock and vibration.

S3, Bioacoustics is responsible for standards, methods of measurement and test, and terminology in the field of psychology and physiology acoustics.

On each of these committees there are representatives from engineering societies, trade associations, government agencies, and other organizations concerned with noise and hearing. In addition, prominent individuals in the field of acoustics have been appointed to serve on the committee to achieve a balance of interest. Details on the scopes and membership on each of the committees is contained in Attachment 2.

APPROVED AMERICAN NATIONAL STANDARDS

There are in existence 31 approved American National Standards that have been approved by the three acoustical committees. (Attachment 1) The majority of the approved standards concern terminology, measurement methods and instrumentation. Two important publications have also been produced by the committees that included S3-W-39 "The Effects of Shock and Vibration on Man" and Z24-X-2 "The Relation of Hearing Loss to Noise Exposure."

CURRENT WORK

One of the task of the committees is to review and update standards that have been approved. In addition, many new standards are being developed on test methods and instrumentation. Other topics on which work is being done include the following:

Sound output of consumer products
Measurement and evaluation of noise in rooms
Measurement and evaluation of motor vehicle noise
Method of measuring and evaluating aircraft noise
Evaluation of noise with respect to human response
Measurement and evaluation of outdoor community noise
Land use planning with respect to noise
Measurement and evaluation of stationary noise sources
Speech intelligibility
Hearing conservation criteria
Determination of interference of noise with speech intelligibility
Hearing protectors Biological effects of ultra-sound

STANDARD NEEDS

With respect to noise, most of the standard work done so far has been in the area of fundamentals. Terminology, method of measurement and test, and instrumentation comprise the majority of national standards adopted so far. Some of these standards, in order to be useful, had to, of course, take into account the effect on man. A good deal of the current work of the acoustical committees is concerned with this subject of bioacoustics.

Those concerned with noise abatement will be disappointed to learn that there are no national standards which define limits of permissible noise from products. It is also quite likely that there never will be any, since noise limits directly affect other performance criteria and cost. This fact not only has antitrust implications for committees, but it makes it unlikely that any agreement could be reached that would satisfy the diverse requirements of all concerned parties. It would appear, then, that where health and safety of the public are concerned, the difficult task of providing noise criteria will have to be done by regulatory bodies.

Mr. Chairman, Mr. Eldred and I will be happy to answer any questions which you or your Panel may have.

Dr. Meyer: Thank you, Mr. Hohn.

Mr. Martin?

Mr. **MARTIN**: No questions.

Dr. **MEYER**: Dr. Dietrich?

Dr. **DIETRICH**: I have a question that relates to the construction equipment area. It comes to us from Boston at an informational hearing in Boston preliminary to their new noise regulations. We heard the following statement, that ANSI recently adopted the CAGI test code as one of its standards, and I would just like to know how recent that was, if, in fact, that did happen.

Mr. **HOHN**: Yes, that was adopted about a month and half ago, and that was a tested code. But if my memory serves me right, that test code described a method in which you would measure the performance, the noise from the equipment. It did not set limits.

Dr. **DIETRICH**: I understand that.

Mr. **Hohn**: I want to make that clear. This happened about a month and a half ago.

Dr. **Dietrich**: And a connected question: Is an ANSI working committee presently working actively on a noise test code or measurement code entitled something like "Engine-Powered Equipment Noise Measurement"?

Mr. **Hohn**: I am not aware of it. As I said, a great deal of the standards development work is being done by the various trade associations and engineering societies. So that while our various bodies—while our various Boards that we have for, say, acoustical, for mechanical, and so on, have identified these needs or are aware of these programs, I am not personally aware of all of the individual standards that are being developed by all of our member bodies. There are 160 very active and leading Societies so I can't answer that question.

Mr. **Martin**: Excuse me, Mr. Chairman, for my colleague here. There is a project of that nature. It's in S3 and, in fact, to get you more information on it, Dr. Dietrich, Ralph Hillquist, who is out to lunch now, will be back and will testify later. Ralph chaired that project for a while, a few years ago, and probably knows where it stands.

Dr. **Meyer**: When he testifies a little later in the afternoon—I think, though, testifying on another subject—maybe you might ask of him.

Mr. **Baron**: I made a statement in my book, if I might refer to it, which was written over two years ago, and I would like to know if it's no longer applicable.

> "In the United States technical societies, trade groups, and testing organizations develop noise measurement standards and noise limits. Their umbrella organization is the private American National Standards Institute.
>
> "The organizations have standing standards committees, the members of which include representatives of manufacturing concerns and insurance companies. There is some government representation, predominantly from the Department of Transportation, DOD and NASA. It really doesn't matter whether government or private groups work on a standard. Through interlocking memberships on policy-level committees, industry pretty well controls what items will be considered for standards, what the criteria will be, if any, and how many years or decades it will take before a given standard is adopted as a 'recommended practice.' Delays are rationalized on the grounds of fairness to all parties, thoroughness, and the need for full agreement. Probably a more appropriate reason is that every year that goes by without a standard is considered an economic plus for industry."

Do you care to comment on that?

Mr. **Hohn**: There are many ways of getting standards, as I said, national standards. Now, what the Institute has done in the last year and a half is to revise its approval mechanism to provide an independent body to approve standards. This means, then, that if a body—and it doesn't have to be a committee operating under our procedures—has a method of developing, has a method of standardizing, something that can bring it into the Institute now and it cannot be delayed by some one group in a committee who would like to see further work done, or for whatever reasons you imply in your book.

As a matter of fact, in the case of the CAGI Standard which was just brought up, that group, because there was a need for that standard, had gone to the one committee some years ago and was unable to get any work moving, so it developed a code itself and then brought it to the Institute. And after review, public review and comment, it was found this product of the CAGI group was a good one, and it was approved as a national standard. So the Institute has taken steps to make it possible to get work done faster without being blocked by perhaps special interest groups.

And another area the Institute has also done something—and remember that the Institute itself does not write standards; it is the various bodies. It's the SAE, the ASME, the IPPP, LPES and independent government agencies who are sometimes setting standards to use. Now that we accept that, we are doing all of this work.

Now, we are revamping our standards boards, and this is the development aspect of the National Standards Institute activity. Their job is to identify standards needs and to see that something is done about it.

Now, I think that an example of this—and not in your field, unfortunately, but in the case of the nuclear field, for example, when we restructured the Institute a year ago, the nuclear board took their job very seriously, and they restructured the operation so that they now have under their cognizance the entire standards activity in the nuclear field. And they are taking steps to expedite standards through the standards committees and through the member bodies that are working on them. And we are doing—and we are trying to do the same thing with other boards to increase their productivity and—of these various committees and organizations so that we can meet society's needs for standards.

Dr. **Meyer**: Now, Mr. Baron, would you yield a minute? I would make an observation at this point which is probably going to pull down the lightening and thunder on me. One of the problems that led to the conditions that you describe in your book is not necessarily industry domination of these organizations as much as it is a fact of life of getting eight or ten professionals, all jealous of their own eminence, prestige and position in the community, to agree about a subject on which they have diverse views.

I have served on some of these predecessor ones and I was a member of the C-54 Committee years ago, and the C-11 Committee. And I can tell you, if you get 35 people, all of whom—some of whom are writing books—and I am sorry I have to say that—trying to agree as to whose terminology and whose semantics and whose method of measurement and whose method of conducting the test is going to be the standard can cause some incredible delays.

I hope that you understand that this is as much of an inhibition as, shall we say, dollars and cents influenced by industry.

As I said, I realize I am probably pulling lightning and thunder from the sky.

Mr. **BARON**: I think that these hearings are not meant to be all sunshine.

Dr. **MEYER**: And if you would like to comment on that, either of you distinguished gentlemen, I will be pleased to have that into the record, too.

Mr. **HOHN**: I would certainly second that statement, after many years of experience in attempting to bring together diverse opinions to come out with a document of new sound level meter standards, which, for the first time, gives us a precision sound level meter. This has been 10 years in borning, since the old sound level meter standard of 1961, and it came about even here where it doesn't involve man. It merely involves an instrument which is hardware, a little bit more hardware, and you can get to it with physical facts without getting into subjective things. But even there it took 10 years.

Mr. **BARON**: I get the feeling there is a change taking place. There is an escalation in the development of—

Dr. **MEYER**: I think that what he said here indicates that people have long since come to realize that the fear that I was describing is not the best one for introducing standards, necessarily.

Do you have another question, Alex?

Mr. **BARON**: You used the word "consumer" as being represented. And I—I think—Am I not correct that this is used in a special sense?

Mr. **HOHN**: Yes. By "consumer," we are using consumer groups to represent the consumer, because we have made pleas. We have tried to identify and tried to get into the standards-making process the knowledgeable consumer, and so far we haven't found a formula for doing it. So we have to rely on the consumer groups that we have as membership and these may, in some cases, be large buyers, large department stores, for example, who are very active in the consumer field because they want to sell good products. And so, therefore, they in effect are protecting the consumer so they provide a good voice.

In addition, there are some people from government in the consumer area as well, and this raises another point which I wanted to make. It was raised this morning on this area of public representation. This is sometimes confused with consumer representation.

Now, again let me cite: As an example, someone raised the question of, "Well, shouldn't we have somebody in nuclear work from the consumer area?" It turns out that by "consumer," it means the man who buys the product, so therefore he has no role to play in the nuclear field, but certainly the general public does because we are all affected as citizens by what happens in the Atomic Energy area and development there. But it was felt there that the private—the proper representative of the public go to the Atomic Energy Commission, and any other agency of the Government, such as the Labor Department, represent the public, protect the public, because they have the expertise and they have the charge by—as government agencies to do just that job.

Mr. **BARON**: Well, can—Ironically, I am on a writing group.

Dr. **Meyer**: After our comments about authors, you can go ahead and make some about scientists.

Mr. **Baron**: I want to suggest that I know this problem of expertise, but whether or not consumer groups as interpreted—now, say, consumers' unions or—there are other consumer groups. Consumer federations might not be involved in the process of developing standards in line with the general trend of concern for the—the public as a consumer as distinguished from a company or industry as a consumer.

Mr. **Hohn**: Well, we have had that—The consumer groups, as such, do give us a—and are working in areas where standards are coming in to us for approval and then, unfortunately, it is too late because the standard has already been molded. And we are trying to get them to give us some input at the early stages, during the writing stage, and this is very difficult to get but we are making some progress there, too.

Mr. **Baron**: There is that possibility that consumer groups representing the public might some day be involved in the process with the organization?

Mr. **Hohn**: Oh, yes. As a matter of fact, if you know of such an individual or groups that can furnish this kind of assistance to our committees or to committees of these other bodies who are writing standards, let us know because we can't find them.

Mr. **Baron**: My last question. Would you like to see Government play a role in your operation in terms of funding, or some such method?

Mr. **Hohn**: Well, it's not a question of whether we would like to see it. There is a feeling among the—As you know, one of the members of the Board of Directors is the Director of the National Bureau of Standards, so the Government is involved right there at the Board of Directors level. We have Government participation at our various operating council and board levels, so that we have a great deal of Government participation right now.

What we have been seeking in the years past has been a recognition from the Government that we are doing a job for the—for the entire country. And we haven't gotten this recognition yet, for a number of reasons.

Also, we are—we also feel—and as "we," I mean the members of the Board of Directors and the members of the Institute—that there is some share of the cost of standardization that Government should be picking up but is not now doing. The Government is participating by sending delegates and representatives to our various writing committees, the standards committees, and the operating boards and councils of the Institute, and there is, of course, a big area right now that is crying for help. That is the international area, because of trade volume, and there is a bill under consideration in Congress right now to provide financial support to the Institute and to other standards-writing bodies so as to improve our posture in the international standards field. So if you say, though, sure, we are seeking aid because we feel the Government does properly need to support some of the activities that are going on in the standards field. That means not only the Institute but in other areas of our member bodies.

Dr. **Meyer**: Will you yield, Mr. Baron?

I think it would be worth while for the record to show that the Environmental Protection Agency, working with its colleagues, the Department of Transportation, is providing some limited support working with ANSI through a member society on part of the international standards activity in the acoustics area. We have negotiated through Dr. Henning Von Gierke, who has asked us to support that and, within the limited resources that we have, we have been providing some support for this.

Mr. **HOHN**: Yes, Dr. Meyer, and also in the area of the nuclear standards where the Government—where the nation is in serious need of nuclear standards, again the AEC is funding a part of our expanded operation to get the standards that we need in the nuclear field. They are financing this, as well, so there is Government involvement, not only at the personnel level, but there are now some Government fundings with respect to the Institute's activities, both at the Institute level itself as well as our member bodies and standards-writing committees.

Mr. **BARON**: Would that—In getting, for example, an agency like the Consumer Federation of America involved in some of your work—Are you familiar with that organization?

Mr. **HOHN**: I am not familiar with that organization.

Mr. **BARON**: Let's say an umbrella group of consumer organizations located in Washington. I am just trying to clarify that point of whether or not you would entertain public groups coming into your organization and working with you.

Mr. **HOHN**: Well, there is a move to get more public groups working in the Institute. This is true.

Mr. **BARON**: That is happening?

Mr. **HOHN**: There's—It's moving in that direction. There is a trend.

Mr. **BARON**: The last question is: Do I understand correctly that in order—I do understand correctly that in order for a standard to be adopted, this consensus stress you use has to be 100 percent?

Mr. **HOHN**: No, sir, that is absolutely wrong. As a matter of fact, one of the things that we did when they restructured and rewrote the procedures for the Institute a year and a half ago, we did it in two areas: one in the development area. We made it clear that our procedures for development, whether it's under the committee method or under the—the proprietor method by means of SAE and ASTM bringing standards in, we don't have to have a unanimous vote for a standard.

The principal reads something like this: that there should be a general acceptance and agreement among the parties concerned, but not necessarily unanimity. And this is a very important point.

Now, it's true that if you have one manufacturer in a country making something and all of the buyers want something different, obviously you don't have consensus, if the manufacturer doesn't agree. On the other hand, if you are talking about safety and health, although we do have Government officials, Government Agencies, on the same committee, then that effort isn't going to get by, regardless of what the manufacturers want. So consensus is not an easy thing to define.

Mr. BARON: But it's not one hundred percent?

Mr. HOHN: No, sir. As a matter of fact, this is one of the drawbacks in the past. There has been a feeling among some of your engineers and scientists working on some of the standards committees, again in both areas, that they had to have perfect agreement. Nothing could be farther from the truth.

Mr. BARON: Thank you.

Dr. MEYER: Now, Mr. Hildebrand or Dr. Plager?

Dr. PLAGER: I wonder, sir, if you would tell us, those of us who are not engineers and not familiar with your organization, a little bit more about it. Do you have some full-time staff in the Institute?

Mr. HOHN: We have approximately 110 members on our staff.

Dr. PLAGER: One hundred ten?

Mr. HOHN: In addition to that, the Institute has two parts, you might say. There is a staff part. Then there are the volunteers who come to us, the people that we are talking about from consumers, from Government and from the member bodies, and from companies as well, who make up the governing bodies and council who determine the areas of the needs, who see that the work gets done, who serve on our committees for approval.

Dr. PLAGER: These are largely volunteer people?

Mr. HOHN: They are volunteer in the sense that they are paid by their employer, be it the Government, be it the consumer group, be it the employer, and so forth.

Dr. PLAGER: Not by the Institute, though?

Mr. HOHN: Not by the Institute. Not the 110 who are paid.

Dr. PLAGER: Could you give us some idea in round numbers of the size of your annual budget?

Mr. HOHN: It's around $2 million a year.

Dr. PLAGER: Could you tell us what the sources for that money is in general terms, what—where you get your money?

Mr. HOHN: Half of it comes from publications and the other half comes from member dues. And the member dues—members of ANSI are composed of two parts: those that are in, for example, companies, and the other half are member bodies, as we call them. The member bodies are the trade and professional societies in this country.

Dr. PLAGER: Mr. Chairman, just a parenthetical note. I didn't appreciate the staff implications question with SAE until lunch with Hank Martin, when I discovered he in fact is on the staff of SAE. I wonder if we could get similar information from Bill Scott regarding SAE. I didn't think to ask.

Dr. MEYER: For the record?

Mr. MARTIN: SAE has a full-time staff currently of 135 people, of which approximately 25 are engineers and the rest are clerical and administrative support, data processing, things of that nature. We operate on a budget of $3.5 million a year, and the funds come from a little more diversity. As I have mentioned to you, we have one-third of the funds coming from membership dues, and these are individual engineering members. We don't have any company memberships.

About one-third comes from the sale of publications from our national meetings, papers that are presented. The remaining money—we have a magazine in which advertising is sold, and we put on certain trade shows, engineering exhibits, which support part of the operation of the Society.

And then we have about—a little under 1 percent via Government contracts. And the remainder is contributions from industry sources.

Dr. **Plager**: All right. Thank you.

Coming back to you, sir, Mr. Hohn, with regard to these consumer groups idea, you probably heard my question to Mr. Scott about how the Institute or the SAE is free itself from undue influence because of that—that would naturally generate. I won't repeat the question to you; I think you, in part, answered it. I would simply suggest to you, sir, to identify, for example, the AEC as a representative of the public in terms of nuclear concerns perhaps is a little questionable. You may be familiar with the recent litigation, for example, that—concerning the Palisades power plants in which the citizens—a citizens' group brought suit against the AEC to force the AEC to take into account environmental concerns, the AEC having announced a position that it wasn't concerned about anything except the narrow issue of radiation. It's my understanding the Seventh Circuit has now instructed the Atomic Energy Commission on how to read the legislation and to concern itself with the public interest.

So in some sense, then, it might be that asking the Atomic Energy Commission, or thinking of the Atomic Energy Commission or the Corps of Engineers, for example, as a representative of the consumer is perhaps a—analogous to thinking of the National Association for the Betterment of Wolves as being the agency to look out for the population of wolf growers.

I would also suggest groups like Consumer Union might be possibly input to you.

Mr. **Hohn**: They do have an input to us. They are on our governing councils, and they are also—they provide, wherever possible, leads for us to get representatives of the consumer groups in order to do our standards work. They are an active member of our Council.

Dr. **Plager**: Fine. Thank you.

Dr. **Meyer**: Thank you very much, gentlemen. Your information as to the extent of ANSI's involvement in noise and acoustic work is very valuable, and I am sure we will look forward to working together with you.

Thank you very, very much.

Our next witness is one who will discuss some problems and methods of solving them—relating to noise analysis. In fact, this witness and the witness following will discuss a matter which has been rather extensively reviewed here, and the need for noise analysis and noise measurement. Therefore, I should like to ask Mr. Bobby Greer if he would come forward and let us hear from him.

Mr. Greer will talk on "A Noise Abatement Analysis Center."

STATEMENT OF BOBBY GREER, COMPUTER SCIENCES CORP.

Mr. **Bobby J. Greer**: Thank you, Dr. Meyer.

I believe everyone has a copy of my paper.

My name is Bobby Greer, and for the past fourteen years I have been involved in computer system design and programming, primarily in the field of real time signal analysis. For the past five years I have been associated with Computer Sciences Corporation in Silver Spring, Maryland.

The majority of my work with Computer Sciences has been on Federal Government contracts principally dealing with military applications of computer system technology. One of my most recent assignments was a three-year project for designing and implementing a real time acoustic processing system for a U.S. Navy Submarine Detection and Noise Reduction application.

It is very gratifying to any technical or professional person to know that his efforts, if even in a small way, are contributing to his country's ability to defend itself from an enemy which threatens his home, family and way of life. But it is doubly gratifying to know that these same technical efforts can be applied in a peaceful sense to defending his home, family and way of life from an enemy from within his own community which threatens his environment.

During my vacation in August of this year in Dallas, Texas, I attended the Public Hearing on Noise Abatement and Control held on August 18 and 19 with the central theme of Urban Planning, Architectural Design and Noise in the Home. I enjoyed the hearings very much and was particularly interested in the testimony presented by Dr. Hal Watson, Jr., Associate Professor or Mechanical Engineering at S.M.U. in Dallas entitled "Urban Planning for Noise Control." One paragraph in Dr. Watson's testimony was of particular technical interest to me and is one of the prime reasons for my presence here today. I quote:

> "It is difficult to plan without data and feedback. One severe need is for a systematic method of maintaining a continuous noise survey of the urban area to determine what needs to be done about the noise problems and to provide a way of determining the effectiveness of noise control measures. This could be done by means of permanent noise monitoring microphone stations, attached to telephone poles, transmitting noise data via telephone wires from many locations throughout the urban area to a central laboratory for analysis."

Now, I am sure that everyone is aware of the many instances where scientific technology developed for military applications has proven equally adaptable and extremely effective for peaceful purposes. This is true in the fields of transportation, agriculture and medicine where recently methods of noise and signal signature analysis, developed for anti-submarine warfare applications, have been applied to the analysis of electrocardiograms and have greatly improved the phisician's ability for early detection of heart malfunctions.

With the need for a systematic method of maintaining a continuous noise survey through a central laboratory for analysis pointed out in Dr. Watson's testimony, I immediately thought of the real-time acoustic processing system developed by Computer Science Corporation for the Navy.

With the approval and support of CSC and technical help from my fellow workers, I have taken various functional elements from the existing and operational acoustic processing system to form a proposed Noise Abatement Analysis Center, illustrated on the enclosed diagram.

I would like to emphasize that although this is a proposed center, all the functional elements within the dashed line currently exists in an operational state, including the hardware/software interfaces indicated by the arrows. In other words, I have removed from the full acoustic processing system only those functional elements which are not required for this application and they do not affect the data and analytical flow indicated in the diagram.

I would like now to discuss the data and analytical flow to the proposed Center. From permanent noise monitoring microphone stations throughout a metropolitan area, noise data is transmitted via telephone lines to the Telephone Line Interface Equipment for transfer to the Signal Pre-Conditioning Equipment. As indicated on the diagram, this noise data could also be recorded on FM tapes for later detailed analysis, if desired. Also of importance here, pre-recorded FM tapes from any location can also be processed by the Center without being transmitted over phone lines. This mode of operation would be used for research and development activities, dealing with noise measurement and analysis—a very important additional capability of the Center.

The Signal Pre-Conditioning Equipment is under the control of the Noise Analyst Station which provides for the man-in-the-loop capability of setting and altering the analysis requirements of the Central Computer. Normally, for a continuous monitoring mode of operation, the Pre-Conditioning Equipment would, in real-time, perform anti-aliasing filtering, pass the data through one-third octave (OTO) band filters for band level computations, perform analog to digital conversion and pass the data to the Central Computer.

The Central Computer using a real-time operating system and pre-set commands from the Noise Analyst would calibrate, convert to dB and compare the resulting dB noise level to the authorized noise level for that metropolitan zone determined from the sensor location. If the dB level was within tolerance, the computer could produce a plot of the OTO spectra labeled with sensor numbers and location and time of day, and notify the noise analyst of the out-of-tolerance condition.

The noise analyst at the Noise Analyst Station could immediately begin aural monitoring of the noise from that sensor with his earphone headset and record the noise on FM tape for detail analysis, should it be required.

For this detailed analysis, the noise analyst, through his user-language, could request processing from the FM tape through analog to digital conversion to the Central Computer and then to the Fast Fourier Transform Unit (FFTU) for narrow band spectral analysis and/or auto and cross-correlation analysis. Through these noise analysis techniques, it is possible to analyze the dB level of each frequency component contributing to the overall dB level.

I have included with this paper plots of one-third octave and narrow band spectra produced by the acoustic processing system I have just described. These spectra represent a 400 Hz sine wave summed to a 60 second random background noise sample and serve only to illustrate one type of output available from the system.

As a final step, the computed noise levels and location or source could then be forwarded to an enforcement agency for corrective action.

In conclusion, I would like to state that with this testimony I have attempted to propose a Noise Abatement Analysis Center which could meet my understanding of a current need.

Obviously, more analysis and research is required in this area. But I feel that I have demonstrated that the technical knowledge and system engineering expertise required to design, implement and integrate such a complicated Real-Time Noise Analysis Center does currently exist.

Thank you.

Dr. MEYER: Thank you, sir. We have heard a lot, of course, during the testimony of the last two days about difficulties of certain types of measurement and monitoring schemes and enforcement schemes, and this presentation on technology certainly indicates that maybe some of the problems can be solved by taking a closer look at the type of things you have described here.

Panel, do you have any questions?

Mr. BARON: I just want to express my appreciation of bringing into the record this fact that there are tremendous advances in acoustic technology, and they just don't happen to be available so far in the—in the environmental picture. I appreciate that. Thank you.

Mr. HILDEBRAND: We were told yesterday that some airports are considering using computer monitoring systems. Are you—Is this system that you have outlined similar to the airport system?

Mr. GREER: Yes, I think it could be. Obviously, through the use of a central computer, the scale used for measuring is independent. Obviously, through the computer, you have the capability of either measuring a dB(A) or any other range. I think the advantage of a system such as this is that it does give you the ability to anlyze each frequency component.

Now, I don't think that the current airport requirement is in those limits. However, recently I read that the—I think it was the General Electric that had been able to come up with a noise abatement material which excluded noise that had been determined through cycle acoustic analysis that a pure tone in one particular frequency was bothering people. I think the next step in true noise measurement and control is going to be, once we have determined a level of dB(A), we are going to have to then start looking at the frequency components which are particularly grating on people. And of course this system has a capability already, as well as being able to compute dB(A).

Dr. PLAGER: Do you have a ball park estimate of the costs of this kind of a setup for a community of, say, half a million people?

Mr. GREER: During the price freeze or later?

Dr. MEYER: In order to avoid our getting into one of these peculiar situations that one could get into, you might well go ahead.

Mr. GREER: Well, obviously I had anticipated that question. It is difficult to put a price tag on a system until you know you have every requirement established. I would like to point out that in a system such as this certain of the equipment would be required to be purchased, because, you know, it is especially modified to fit into the analysis system. However, the computer, the faction transformer unit, the whole components, et cetera, are to be leased. I think the best estimate I could give you now is that, I would say, between one hundred fifty to two hundred thousand dollars for the required purchased equipment would be a good figure. The lease prices on the computers and other gear normally, I feel, we use a 10 percent figure. You take the cost of a computer and assume that 10 percent of that is going to be the monthly cost over a certain period of time.

Dr. MEYER: Any other comments? Sheldon?

Dr. PLAGER: No, sir.

Dr. MEYER: Thank you very much, sir.

Before introducing the next witness, I would like to recognize two officials of the Environmental Protection Agency from the office of the Assistant Administrator for Planning and Management. Mr. Howard Messner and Mr. Seymour Greenstone are here, senior officials of our organization. And I am happy to see you joining us among the participants in this hearing.

Following up with that presentation, I am sure the panel and the participants in the audience will be interested in hearing from Mrs. Carole Tanner of Hydrospace Research, who will describe some acoustical measurement techniques which, in part, resemble some of the approaches described by the previous witness.

Mrs. Tanner, welcome here, and we are sure that from what was said before, you had the stage nicely set for your presentation to us.

STATEMENT OF CAROLE TANNER, HYDROSPACE RESEARCH CORP.

Mrs. CAROLE TANNER: I certainly have. Thank you.

I am Mrs. Carole Tanner. I am a senior engineer in Hydrospace Research Corporation, a company who is heavily involved in measurement and signal analysis products of not only airborne acoustics but under-water acoustics.

Everyone wants quiet! This is evident from the increased attention that noise in our environment is receiving. The concern of both the public and private sectors has resulted in not only planned action but the positive steps of formulating and passing into law certain airport noise standards. Among these standards is the Federal Aviation Regulation Part 36 which specifies the effective perceived noise levels of commercial aircraft certified after December 1970 and the airport's Noise Standards of the State of California which set forth the permissible levels of noise around an airport. Both of these noise standards have been applauded as well as criticised.

My testimony today is not concerned with pinpointing the merits and/or deficiencies of noise standards. Rather, this discussion will deal with the measurement techniques for use in these noise standards. The experiences cited herein are based on work we at Hydrospace Research Corporation have performed for both Government Agencies and industry. This work has required the measurement and processing of noise signals to define the three basic properties of noise:

1. Absolute level.
2. Frequency content.
3. Time variations.

The resultant measurements are used in a variety of computational procedures to assess not only the basic nature of the sound signal, such as defining a pure tone component, but to evaluate the subjective annoyance of a sound by calculating effective perceived noise level or noise exposure levels.

How does one measure sound? Well, each noise standard sets down some rather detailed specifications regarding:

1. The instrumentation that can be used,
2. Calibration measurements,
3. Physical location of the microphones,
4. Operating limitations, and
5. Signal processing and computational requirements.

Although the detailed requirements can appear confusing to the non-acoustician, an understanding can be achieved through proper orientation. For example, Hydrospace Research Corporation conducted an "Aircraft Noise Type Certification Orientation Session" for the Federal Aviation Administration and its Regional representatives. The results of this familiarization course are contained in the final report attached as Reference 1.

Measurement requirements for FAR Part 36(1) specify that one locate microphones at three sites and measure the noise of at least six take-offs and six landings. These measurements are processed to define the frequency distribution and energy level every one-half second. These values are corrected to standard day conditions. The corrected data are used to compute effective perceived noise levels which are compared with the allowable limits. Noise measurements for Part 36 are basically planned events.

The measurement requirements for the California Noise Standards, Figure 2, require that for large airports one locate microphones at 12 sites and measure noise above a specified threshold from every operation. Next, one weights the frequency distribution using the A-scale and sums the A-weighted levels every second. Each event is counted and the summation updated. Using the updated summation for specified time periods of the day, the composite noise equivalent level is computed. This level is compared with previously established levels around the airport.

The measurement of data for Part 36 requires an instrumentation setup similar to that shown in Figure 3. The instrumentation consists of a microphone, an amplifier, recording and playback device, and the filter network and computer equipment necessary to yield the answer. The answer can be obtained in two fashions.

The first is called off-line processing, which is performed at a later date, usually at a processing center. This setup is shown in the upper schematic of Figure 3.

The second method is on-line processing or measurement as shown in the lower schematic. Here the necessary filter network and computer equipment are available in the field. The signal is not only recorded but processed as the action is taking place.

The nature of the Part 36 computational requirements makes the use of a computer system mandatory. A description of the in-house and portable field systems designed, built and used by Hydrospace for use on measurement efforts is given in the attached Reference 2.

A typical instrumentation schematic for California Noise Standards is shown in Figure 4. The equipment include a microphone and its associated electronics, an A-weighting network, a detection circuit and threshold comparator, an integrator, clock and cumulator which updates the summation, and an output device such as a printer.

The major difference between this setup and that previously discussed is that the noise is converted to a single valued number much sooner in the measurement process. This does simplify the measurement process to some degree so that a computer need not be integrated into the system. This simplification is further reflected in a lower investment in equipment. The one disadvantage to this simplification is that it is not possible to take a detailed look at any particular noise which contributed to the ultimate composite noise equivalent level.

The need for human engineering judgment can best be illustrated by a typical example. We located a noise monitoring station on the roof of an apartment house underneath the departure path and approximately 4.5 nautical miles from the start of roll on Runway 27 at Lindbergh Field, San Diego, California. The instrumentation setup is shown in Figure 5. We used a simple setup composed of a microphone, amplified, threshold sensor, and tape recorder.

The microphone system monitored the noise at that location continually. When the amplifier output became greater than 55 dB, the threshold circuit tripped a relay which started the tape recorder. The tape recorder stopped when the level had decreased to a value below 55 dB. The system was in continuous operation for a period of 24 hours. We then analyzed the noise by playing back the recordings through an A-weighting filter and obtaining the level every second. These levels were stored by a computer and used in computing an estimated CNEL based on this one day of measurements.

One of the more interesting sidelights was our discovery that ambient noise from sources other than the scheduled aircraft operations were of sufficient level to initiate recording. In one case, a motorcycle achieved a noise exposure level of 91.3 dB(A) per second as compared to 91.1 dB(A) per second for an aircraft operation occurring in that same hour. Equally interesting was the discovery that for this particular 24-hour period the daily community noise equivalent level was determined primarily by four fly-overs in the middle of the night. These takeoffs were those of air freight carriers.

Background or ambient noise can come from man or from Mother Nature. We recently made measurements where crickets and birds near the microphone made more noise than the test aircraft. The effect of high wind speeds on the ambient noise can also cause problems, as could measurements of noise during rain storms or other inclement weather.

Although there are a number of measurement techniques that can be used in implementing noise standards, they are all subject to outside influences which need to be recognized in order that data quality be maintained. As we have pointed out, background noise can be of sufficient level to invalidate the measurement. Therefore, it is urged that the Environmental Protection Agency will, in the course of its work, give due consideration to optimizing the measurement techniques used in noise standards.

Thank you.

Dr. MEYER: Mrs. Tanner, before I ask the Panel to ask you questions or make comments, I want to ask a couple of my distinguished panelists a question.

This paper makes a statement that Part 36 is essentially a planned event measurement—which it is—to NEF's and CNEL's and all these sorts of measurements, also, around a concept of a steady stream of planned events. Maybe I am wrong in that assumption, but I think that is basically the way it is.

Now, maybe the question I have to ask correlative to Mr. Martin and Dr. Dietrich is as follows:

Maybe part of their dissatisfaction is that we are hearing about aircraft noise and, to a certain extent, about motor vehicle noises that, from the viewpoint of the listeners, aren't planned events; they are unplanned events. And maybe some of our whole premises about acceptance is a little bit out of phase with real world reactions of people.

Mr. MARTIN: Well, first of all, as far as the NEF kind of thing, this is naturally a planned event because it's a forecast. See, you have to figure what will happen when—and you are going to forecast on that basis. Part 36 sets up a certification. You have to control everything, including the operation of the airplane, to do this. This is not, in essence, what you hear when you live near an airport, as I can attest to, being one who lives under a flight pattern.

You can go for a long time and not hear an airplane, and then have an hour of a steady stream. Weather conditions dictate which runway is used.

You can have degrees in a situation at night in my area until a heavy fog rolls in and they decide to use an instrument runway instead of a visual. So the purpose of Part 36 and of NEF, from my standpoint, is not intended as anything more than to certify new aircraft and to forecast.

There is a basic difference. CNEL's, the California requirement, of course, isn't set up for planned events. It's a monitoring system which is a completely different concept, although it uses the same ideas.

Dr. Meyer: Any comment, Dr. Dietrich?

Dr. Dietrich: Well, I think I sort of want to agree with Mr. Martin's comments, but add that I don't believe that it's proper to bring criticism against the measurement scheme itself when the consideration has to do with a subjective reaction. I think that this—it's important that you—that it's made clear that there is a—two distinct jobs here.

One of them is to come up with a measurement scheme that will do the job efficiently and accurately, and I think that's what this witness' testimony has been about.

And the other, and quite a distinct job, is how do we tie that together with the expected subjective reactions on behalf of those for whom this may not very well be a planned event?

Dr. Meyer: That's the point I was trying to make. They are different purposes and that's why people perhaps are so upset when they are told, "Well, don't," as was reported to the witness yesterday, and "Well, you are all right because you are in a certain area." Her reaction is that wasn't a planned event for her, and that's what I was trying to get across here, is that we need to keep this in mind. And that the EPA, in its role, will have to start taking a look at some other investigations as to how to interpret the data.

Having had my say for a minute or two, I will ask if any of the Panel have any questions. I will start with Dr. Plager.

Dr. Plager: No questions.

Dr. Meyer: Mr. Hildebrand?

Mr. Hildebrand: I have one question. Can your computer differentiate between noise marks? In other words, can you get a voice print of a diesel truck or a bus?

Mrs. Tanner: Yes. That would be a frequency analysis, and you can—in general, each type of noise source has its own particular frequency distribution. Yes, you can differentiate.

Dr. Plager: Is that how you knew it was a motorcycle?

Mrs. Tanner: We knew it was a motorcycle by listening to it. The dB(A) value wipes out the frequency distribution. You get a number and, therefore, we listen orally to it.

Mr. Hildebrand: I see.

Dr. Meyer: Well, your equipment, as I recollect it, because I have seen it, had it been switched on, if you had heard this sort of thing often enough, you could produce a printout which records frequency characteristics. So you would know whether it was an airplane or a motorcycle.

Mrs. Tanner: We have a number of types of equipment that we utilize. This is absolutely correct. The real time analysis sort of thing gives you frequency distribution as the event happens.

Mr. Baron: Just one general question on cost, because, if I understand correctly, this is the system that California would like to use in its monitoring setup.

Mrs. Tanner: The figure I have in there, yes, is taken from the State of California Noise Standard. There are two approaches to satisfying the state standard for airport noise.

As you may be aware, LAX is going into a very large monitoring system. Some 15 microphones are being located, and they are going to have a computer tied in with the system, and they are capable of doing on-line analysis as well as satisfying the state requirements. Their system goes much beyond what the State has.

We have also seen in our company—we have venders who have shown us what we call black boxes which do the same thing. It's a self-contained system to take it out and set it at the site. It does all of this dB(A) calculations summation in total in the box, and it prints out a number.

It's very difficult to give you a cost because you can do it—or maybe—and I am quoting off the top of my head—for maybe $5,000 for a little black box in a field, whereas a system like LAX, if I remember correctly, that's on the order of $190,000 for the system. But it gives you much more in terms of acoustic output.

Mr. BARON: Is there a direct relationship between the number of what you call black boxes and the ability or inability of the pilot to cope with the black box? Do you understand what I am talking about?

Mrs. TANNER: No, I don't.

Mr. BARON: We understand that sometimes—I think it's Kennedy or one of the airports—

Dr. MEYER: The spoofing business. He spoofs it.

Mrs. TANNER: Well, if you have enough of them distributed along the take-off and departure path, for example, he can't possibly spoof you all the way out.

Mr. BARON: So there's a certain number at which spoofing becomes difficult?

Mrs. TANNER: Oh, yes. If I understand what you are driving at in the noise measurements that we have made of aircraft operations, you can decrease the noise from an airplane taking off by doing a power cut-back, for example. There are safety limitations that the airlines must conform too. Therefore, you can't always do these kinds of things at every point along the departure path.

Mr. BARON: Thank you.

Dr. MEYER: Dr. Dietrich?

Dr. DIETRICH: I am going to direct this question to the witness with respect to the very interesting testimony about the effect of crickets, birds and motorcycles, the latter being something we have heard about before in these hearings.

First, you have—by looking at the block diagrams and then listening to your testimony, I am intrigued to know whether the computer, or what-have-you, electronics, is that you recognized what was a motorcycle and what was a cricket and what was an airplane.

Mrs. TANNER: Well, I don't mean to imply that our computer does. It was discovered.

Dr. DIETRICH: How was this discovered?

Mrs. TANNER: The bird we knew about. We were processing and we show—when we process this house, we have a CRTA screen and we do a time history and frequency distribution as part of our normal processing routine. Anything out of the ordinary shows up, and the birds were discovered in this phase.

Boy, a lot of high frequency noise was there. The cricket had a very interesting noise of about 10 KC, but the computer could not automatically differentiate between one noise source and another.

Dr. **Dietrich**: The same thing with the motorcycle. The discovery that one piece of supposedly aircraft data was from another source?

Mrs. Tanner: Yes. When we played that back—As we are processing, we generally play the signals through a loud-speaker and the guy that does the processing monitors, you know. You know how that goes.

Dr. **Dietrich**: So if you hear it, you can tell?

Mrs. **Tanner**: That's right.

Dr. **Dietrich**: What I was wondering was whether you would care to answer this question about the present specifications for the California systems, whether it provides an adequate safeguard against this kind of artifact.

Mrs. **Tanner**: I think that's may point. I don't believe that it does, particularly if you have a system where you do not have an operator present. There is no way, you know. Even if you listen to every microphone over a speaker, you must have someone to listen to it. So I think you have a very valid point.

Dr. **Dietrich**: I want to make sure that the credit goes where it's due. It's your point, and I think you made it well.

Dr. **Meyer**: I have only one observation, and Mr. Baron asked for permission to ask one other short question. Before you do, I just want to talk about crickets for a minute, if I might.

When we were down in Dallas, Texas, a friend of mine presented us with a tape. It wasn't during the course of the hearing; it was outside of the hearing. He had made a tape of some crickets in which an actual measurement had been made. There were some cicadas in a tree down there and a member of the staff at Southern Methodist University had made measurements. The measurements were 95 dB(A) 10 feet away from the tree, which will give you some order of the magnitude of a swarm of cicadas hard at work early in the evening.

Mr. **Baron**: It's interesting because the point I wanted to raise—and that is that this happened in Coral Gables and the air-conditioning industry was upset because in Coral Gables the noise level, they claimed, was lower for air-conditioners than it was for crickets and birds.

Although this brings laughter, this is a very serious point because it hurts people. We have to be realistic about noise levels. There must be some difference between cricket noise and, we will say, jet noise.

Mrs. **Tanner**: Definitely. As I stated, the cricket noise was very—showed up very much so on our frequency distribution. It was a dampened sine wave of very high amplitude that decayed over a short time period.

Mr. **Baron**: This is one of the disadvantages of the dB(A), the fact that it might not show up on a unique frequency distribution, and I think that for the record we should realize that point

—that dB(A's) is a handy tool and that it does have some problems in special situations, and that you can get a low or a high dB(A) and yet not have an equivalent. You can have two dB(A's), one of which might be a problem and the other not as much a problem, or no problem.

Mrs. **TANNER**: Absolutely, yes. I might cite one other experience that we have had in some field tests back East near Atlantic City where we took measurements over a 10-mile range from the airport. And at one location, about five miles away, as the airplane approached during the test, there were chicken hawks in the nearby forest and they set up a terrific yell when the airplane came in the air, and in some cases did obscure the data in some respects. So it's a little more subtle than a lot of people realize when you have an aircraft which is a noise source and annoying, but when that aircraft disturbs the animals, it can also become quite annoying.

Dr. **MEYER**: Well, I think without belaboring that much more, we ought to go on.

One point did occur to me, and that is there could be an inference from some of this regarding problems with the California system, and of course we don't want to put ourselves in the position of appearing to be in favor or against any of these systems. My purpose is to obtain information, so I have to know if there are some people that have been associated with that system here and if they would desire to submit for the record any comments that they might feel arising out of this line of questioning. I will be happy to have them and include them in the record.

Mr. Eldred of Wyle Laboratories was a member—or people from the state of California mentioned that his firm had been under contract for a good bit of this. He feels that he—or the State of California wants to make some comments on that. Well, I will be very happy to have it for the record.

I do not, as I mentioned before, take questions from the floor because we are operating under rules similar to those by the House Committee on Government Operations. This is a hearing, not a debate, so I have to do it in that way.

So please feel free, if you want to interject anything for the record, we will be happy to receive it.

Thank you, ma'am.

My next witness will be Mr. Roger Ringham of the International Harvester Company. And, Mr. Ringham, might I suggest, if it is not inappropriate, in order to do this in a proper manner —and I see you already anticipated me—that Mr. Staadt join you. For those of you who are not familiar with it, Mr. Ringham has done a considerable amount of work in regard to noise reduction with heavy vehicles and their equipment. I am most happy to have you as a witness again.

Proceed, sir.

STATEMENT OF ROGER RINGHAM AND RICHARD STAADT, INTERNATIONAL HARVESTER CO.

Mr. RINGHAM: Panel Members, ladies and gentlemen:

As we have done at our previous performances at Atlanta and Chicago, in the interest of time we are going to make our presentation brief and as factual with engineering data as we can.

International Harvester Company manufactures and sells a full line of highway transportation vehicles, construction equipment, agricultural machinery, and industrial machines. These products include farm tractors, harvesting machines, construction and dirt-hauling equipment, crawler tractors, logging equipment, off-highway trucks, as well as a complete line of highway vehicles. With this very diversified mix of machines, International Harvester is quite involved and concerned with control of noise and the efforts of your group within EPA.

We are most happy to appear before you and your panel with a few points regarding regulations and enforcement. Much experience has been gained through our dealings with the State of California and the City of Chicago in their enforcement of manufacturer and user noise levels. We have had considerable experience in the measurement of vehicle noise in our efforts to engineer highway vehicles to meet the present regulations. We hope this background can be of some help to you.

In the discussion of any proposed regulation, the following factors must be considered:

1. Feasibility.
2. Enforcement.

To expand upon these points, let us take each one separately.

1. Feasibility. The reason for having noise regulations is to achieve a more desirable environment, that is, lower noise levels. Industry should have the freedom to meet these objectives by the most economical means. To this end, regulations should specify overall noise levels, not machine components or component noise levels. As an example would be a law requiring mufflers when offending vehicles may not be properly controlled by a muffler alone.

Many sources contribute to the overall noise produced by a given machine. Below certain limits, the reduction of machine noise involves extensive research and development followed by complete redesign of several components. In the case of large diesel trucks, sound is produced by air intake systems, exhaust systems, cooling fans, engine mechanisms and combustion, transmissions and tires. It is affected by cab size, shielding effects from components such as fuel tanks, and responsive panels in the cab and/or hood. We are, even today, adding acoustic shielding to some of our products. As you can see, noise identification and reduction are complicated and involved processes.

With this in mind, any regulations should be announced well ahead of the effective date. The design and development for the necessarily wide variety of optional configurations can involve many months, or even years, followed by tooling and production start-up time of one to three years.

User regulations should be based on manufacturer requirements at the time a specific vehicle or machine was produced. There generally is no reasonable way for the user to retrofit a machine or vehicle to achieve a noise level below the original design level. One exception would be vehicles which had no limits at time of manufacture and can be brought down to a reasonable level by adding a muffler. Even this cannot be accomplished universally. With some older vehicles, there are no physical means for mounting a muffler. Providing such means would require major structural modification.

To avoid the confusion and inefficiency of many diverse requirements, federal regulations and measurement methods must preempt all state and city laws.

So we will proceed with our slide show now.

Dr. **Meyer**: As you know, that's an area of great controversy and of much concern to us, because we are going to be involved in it, so we will look forward to this.

Mr. R. L. **Staadt**: We would like to speak to enforcement for a few minutes.

A regulation or law which cannot be enforced can be worse than none at all. Regulations without effective enforcement only penalize those who honestly try to comply and the full benefit is lost to the general public.

Manufacturer requirements for large trucks should be based on maximum noise levels as obtained by SAE Recommended Practice J366, "Exterior Sound Level For Heavy Trucks and Buses." This acceleration drive-by procedure is most satisfactory in that it produces the noisiest condition and can be consistently reproduced. Manufacturing requirements on other equipment should be per SAE Recommended Practice J-952B, "Sound Levels For Engine Powered Equipment," which is again a reproducible test.

Surveillance in the field or on the highway is a very important aspect of any noise legislation program. For highway vehicles, this phase could include roadside surveillance as the vehicle passes, and noise tests at weigh stations or safety inspection stations. The latter procedure would cover a greater number of vehicles under controlled test conditions. We, as engineers, are participating with the Society of Automotive Engineers in developing procedures applicable to such surveillance.

Measurement of vehicle or machine noise must be done by technically trained personnel with proper equipment at properly selected sites. As the number of such personnel available at the present time is quite small, the establishment of training courses must be considered. Such courses must instill the necessity of using good techniques. These would include the need for careful handling of the delicate instruments, frequent calibration of the microphone, and instrument system, effects of temperature, wind and weather, and, above all, adherence to the test conditions that must be specified in the regulations.

To get some feeling of the quantitative effects of site selection, we had a team of our experienced specialists run a relatively simple test with one of our trucks in Fort Wayne, Indiana, the home of our Truck Engineering Department.

The following slides depict the nine sites sampled. Our discussion will first highlight the departures from site requirements of SAE J-366, after which we will review the quantitative results.

Site 1 shows our new truck sound level test area. This, in all respects, meets the specifications of SAE J-366; and being on our property, is isolated from other traffic or industrial background noise.

Site 2, a hard-surfaced public road intersection, also meets J-366 in its general layout.

Note that Site 3 has a grassy cover between the road and the microphone.

The conditions of Site 4 are similar to Site 3, but, in addition, the microphone is positioned where the group has sloped three feet below the roadway.

Site 5 is similar to Site 3 in that it is grassy, but there is also a grass-lined, three-foot-deep ditch between the road and the microphone.

Site 6 would comply with the standards of J-366 except for a six-inch to eight-inch curb about 15 feet from the center line of the truck's path.

The key things about Site 7 are the fence behind the microphone and, though not shown, a four-story building across the street from it.

Site 8 includes curbing, a stone wall 12 feet behind the microphone, buildings across the street, and a slight grassy rise about one and one-half feet from the street to the microphone location.

Site 9 has a good parking lot surface for the microphone location, but the lot is surrounded on three sides by buildings. There is a cemetery across the street.

Table 1 shows the sound level produced by the truck operating under controlled test conditions of full throttle acceleration to maximum engine speed at each of the nine sites.

Sites 1 and 2, while different locations, both meet the SAE J-366 requirements and yielded identical results of 87½ dB(A).

The 1½ dB(A) lower noise level measured at Site 3 resulted from the absorptive rather than reflective nature of the grassy surface.

In addition to the absorptive grassy surface at Site 4, the lower position of the microphone resulted in a further reduction of one-half dB(A) in the sound level.

Site 5, here the presence of the ditch, being grass lined, did not alter the results obtained over the level grass surface.

As a higher sound level resulted at Site 6, the curb evidently slightly increased the influence on the ground reflected waves.

Site 7 had reflective surfaces both behind the vehicle and the microphone which raised the sound level over that obtained on the standard site which was free of such reflectors.

Site 8 combined the noise level increasing effects of the curb and reflecting surfaces with the lowering effect of grass. The net result, however, was an increase in sound level.

Site 9 had buildings surround the parking lot where the microphone was situated. These buildings supplied enough reflections to raise the sound level by 2 dB(A)—the most of any of the sites—a 67 percent increase in sound power.

It should be noted that the individual measurement variation at each of the sites was no more than ½ dB(A) total spread. This illustrates that even though certain sites either attenuated or amplified the sound level at the microphone, the change from the standard site was very repeatable and thereby the sites might be calibratable. In all cases, the microphone was located 50 feet from the path of travel. It has been our experience, as well as that of others, that the microphone must be at about 50 feet from these types of sound sources to be free of the less repeatable near field effects. The consistency of measurement at each of the nine sites bears this out.

We consider that our short survey further suggests the strong possibility that at least certain types of site may be "calibrated." Further evaluation of this would be to include a variety of truck configurations, that is, single and dual vertical stacks, horizontal exhausts, gasoline and diesel engines, and so forth. By these rather straightforward means, the EPA could determine whether Site-to-Site sound level measurement variation is vehicle configuration sensitive. If they prove not to be significantly dependent on vehicle configuration, a few "passes" by one of two "calibrator" vehicles could define the dB(A) increment that would, in effect, be the site calibration quantity. This could also be extended to include other vehicles in typical traffic mix to ascertain the limiting conditions for discrimination of sound levels from individual vehicles.

Again, we appreciate the opportunity to appear before you and your panel, and hope that this information is helpful to you.

We will be happy to answer any questions you may have at this time.

Dr. MEYER: Well, I can assure you it's most helpful, particularly in light of some of the discussions here on previous days regarding difficulties in finding the right types of test sites.

Dr. Plager?

Dr. PLAGER: How sensitive to the test results are things like the load in the vehicle, gasoline—quantity of gasoline in the vehicle, changing drivers? I assume that each run there was a standard speed gearing—gear use at certain points; is that correct?

Mr. STAADT: Yes. But again, this was specified by the procedure outlined by J-366, which, again, is a maximum noise situation.

To answer your question about gasoline, I assume you mean the amount in the—of the fuel in the tanks?

Dr. PLAGER: Yes, the weight of the vehicle.

Mr. STAADT: This was not—this would not affect it because this is an acceleration-type test, and so the vehicle or the engine is under full load, and it also goes through its noisiest rpm range.

Dr. PLAGER: And you were able to do this at all the sites in the same fashion, even though one or two of them were apparently downtown areas?

Mr. STAADT: We made it a point to do this just to keep that variable out.

Mr. RINGHAM: See, the key point here is that these are always maximum load, maximum engine speed, tests, but with a truck having many gear ratios that these typical trucks do, running the downtown tests in low gear. So we feel that this has offered promise, not proof yet, because the sampling is relatively small. I feel that rather than wait until we get a lot more results, that you would like to hear about particularly this view of the fact that it's not a costly evaluation to run. This whole thing took about one day to run.

Mr. STAADT: One and a half days.

Dr. MEYER: This is something we are going to have to explore further when we get into this.

Mr. BARON: First I want to thank you for this presentation, which is a—from a layman's point of view, a very lucid description of some of the test procedures which are, to some of us, kind of esoteric, and I think that some of the—in the technical end also esoteric.

But you say measurement of these vehicles must be done by technically trained personnel with proper equipment. Do you have an accepted criterion for technically trained personnel? We have heard evidence, you know, where somebody said they took on a member and in 30 minutes they had the operator trained. I don't know what the State of California does. They have a training program. I don't remember if we were given the input on that, but what is it in your thing?

Mr. STAADT: Well, for the actual measurement and surveillance, I think that you do not need to have someone formally educated, not with engineering, let us say, an engineering education. But you do need someone who is technically oriented and has instructions on the factors that will affect their readings, someone who has an appreciation for what can lead them astray, what can give them wrong figures. So that not a formal education, but surely a strong orientation. Again I am speaking of the surveillance teams, and I think the State of California probably has a little more of a feel for this than we would because they have done this actually. The City of Chicago has had some experience along this line where they have learned that you need technically oriented people at least, and technically educated people would help even further.

Mr. BARON: When does wind become a significant factor?

Mr. STAADT: About 12 miles an hour.

Mr. BARON: And temperature, because this is often used in complaint situations that the wind—

Mr. STAADT: Temperature? You are talking about high temperature or low temperature?

Mr. BARON: Either.

Mr. STAADT: I cannot speak to this, other than we have not taken temperatures into account in the normal range of temperatures in Indiana. Of course, obviously we don't get out there on zero degree days unless we have to, and I can't recall whether we have. I think that probably the greatest effect temperature would have would be the noise output of the truck, not the instrumentation. Of course, you have to keep the instrumentation warm and that sort of thing, but beyond that—

Mr. BARON: Is it accepted procedure to measure and report in half decibel increments?

Mr. STAADT: Yes. The half decibels come in mainly due to the averaging of multiple runs, if you can read in half decibels. But generally they are the result of averaging.

Mr. **BARON**: And this is what you are giving us here?

Mr. **RINGHAM**: Excuse me for a moment. These particular tests, the people were instructed to run it just as carefully as they could because we are looking for the site repeatability as well as the site variations. So we wanted a little more than normal care.

Mr. **BARON**: I wanted to clarify that. What you are giving us here is a result of averaging or is it a single event?

Mr. **STAADT**: In this case we were reading as closely as we could, and it still involves averaging as well as reading quite closely.

Mr. **BARON**: In other words, you are following the procedure of five readings, or whatever—

Mr. **STAADT**: Yes.

Mr. **BARON**:—and then averaging in that sense?

Mr. **STAADT**: No.

Mr. **BARON**: I raise this question because sometimes when members of the public have—or others have given or used a half decibel or fractional decibel, they have been laughed at for doing that.

Mr. **STAADT**: Well, you have to realize that this test—these tests were run under the best controlled conditions. Even though they were at different locations, we had the same driver in each case; we had the same truck in each case; we had the same man reading the instrument in each case. This helps a lot, rather than to compare a reading, say, that we took at our Location A and someone took at a different location on a different truck with a different driver, and then compares it, and it comes out within a half dB. It doesn't mean a thing there.

Dr. **MEYER**: So there is no confusion in my mind, it's quite clear to me that what you are saying here is: If you have the same driver and a certain characteristic truck, even though you don't have the same type of test site, you are going to run the test you on a proper site that meets all the SAE requirements just as strictly as you can on that vehicle; then you take that vehicle and this other site and run through and get your test, then you can say, "I can convert any readings on trucks, no matter what they are; this is calibrated, the site and the instrument." Is that what you are saying? Is that what you are trying to get at?

Mr. **STAADT**: You mean in the calibration of site?

Dr. **MEYER**: In the calibration of site.

Mr. **STAADT**: Well, we have mentioned that this might be a possibility and of course this is based on a very, very limited test data. And again, yesterday the California Highway Patrol, Mr. Craig, mentioned that they had a contract out to determine just this sort of thing. So we only suggest this may be possible.

Dr. **MEYER**: This is an area you are going to explore?

Mr. **STAADT**: It would be well to explore.

Dr. **MEYER**: It's very useful information.

Are there any other questions?

Mr. **BARON**: Just for the record, I would just like to bring into the record in terms of the development of your measurement program, annual standards program, and so on, the big gap that exists between the application of acoustic measurements in the military and in civilian life. The primitive—almost primitive developments that are available for us as a civilian at this time.

Dr. Meyer: Fine.

Mr. Ringham, might we ask for the lights, so we don't have to keep everybody in the dark?

All right. Dr. Dietrich?

Dr. Dietrich: Mr. Staadt, I think I would like to first make you aware of the fact that I am really pleased with the work that you have done, and the fact that you described it as something done in a fairly short period of time wouldn't in any way influence my feeling of the value of this work.

Second, I would like to ask that another possible interpretation or conclusion that comes to my mind as a result of the data that you have collected—Would you agree with me that the data that you have collected shows that an alternative to the calibration of the sites might be the correction factor, such as the City of Chicago has presently incorporated in its noise measurement procedures?

Mr. Ringham: I would challenge anybody to try to predict ahead of time the calibration results. We tried. We couldn't rationalize it.

Dr. Dietrich: I am not thinking of the idea of predicting what the numbers might be for calibration of the site. I am saying: Do you think that this lends your data—does your data lend some credence to the idea that you could provide some conservative guidelines or conservative numbers for correction that would enable an enforcing agency worried about our limitations? And I think that's what I meant to direct this to, to use area sites.

Mr. Ringham: The point you are suggesting is, you come up with some correction tables that Chicago has been trying to work with, admittedly, but those correction tables would never predict what we got here.

Dr. Dietrich: Not an effort to predict, but they would safely encompass what you have here?

Mr. Staadt: You said to correct data to some standard condition from some unstandard site.

Mr. Dietrich: No, I am trying to find out whether you would agree that there is another use for it besides that, and that might be to say that, given in one sense one of the things we know we have got on the highway is some serious offenders, and what I am saying is: Can't we do something at some of these sites? Couldn't we still get that serious offender, even though we put in a blanket correction or scheduling blanket correction that might catch the new offender at a site because of a slip-up at that site, but enable us to do some good?

Mr. Staadt: I am aware of that approach, surely, and that has some merit. But we are suggesting something that is in—

Dr. Dietrich: I know you are going further; I appreciate that.

Mr. Staadt:—more appropriate by running a real material calibration where you are no longer dependent on what a—proving something which turns out to be a pretty hypothetical thing. In fact, we got into running these things, trying to check some of these tables, and couldn't do it.

Dr. MEYER: Could I ask both the witness and the Panel to yield while I direct a question based on this exchange to my legal members of the Panel?

Dr. DIETRICH: Absolutely.

Dr. MEYER: You know, considering a case in court based on meter readings and the fact that the law may have called for a standard test condition, would the approach that these two gentlemen theoretically are talking about, a melding together of the same ideas with some nuances that occur to me as I have listened to it, what would it take to have a violation stand up? Would the calibrated site stand up all right versus using a correction table, do you think? It's a variation in a test procedure I am thinking of. I am thinking of some of the problems they had earlier with radar violations. That's what is worrying me a little bit.

Mr. HILDEBRAND: I think probably it would be very difficult. I think they would—it would be—would not have—have authority of just which you could rely on, and I couldn't say which would be most reliable.

Dr. MEYER: Well, then carrying both of these discussions a step further, I would like for you legal experts to—

Dr. PLAGER: Before we go on, I agree with Jim's response. If you are premising a regulation which specifies a single test procedure, for example, SAE J—whatever that is—if you vary from that specific test procedure and that test procedure is written in as part of the regulation, and you are alleging a violation of that regulation, then you are going to have a problem. But if the regulation is written to say the SAE J-umpty-ump test procedure or a calibrated site in accordance with the procedures for calibrating sites, and then spell that out, then you are—then you are violating the regulation of the calibrated site regulation. And I think it would stand up pretty well.

Dr. MEYER: Suppose you had a table of corrections based on measurements such as from the test site or other means, would that stand up, do you think?

Dr. PLAGER: Yes, as long as you could bring in expert witnesses who could testify that sufficient runs had been made, sufficient testing, empirical testing had been made, to establish that the calibration table was in fact reasonable accurate.

Dr. MEYER: Without belaboring the issue further, I will pose a question primarily to the lawyers on the panel.

Suppose you used a calibrated site or a test site, there's some problems that both of you gentlemen indicated would develope with a screening device. Who would identify the vehicle that was a gross violator? You ought to look at it. Would too many of them slip through this way if you put them through the more precise testing station?

Mr. STAADT: You are talking about in the case of the chart correction?

Dr. MEYER: Well, of either one of them.

Mr. STAADT: Well, I think that the calculated site would be much more accurate and of course you could cite and make stand-up ones that were much closer to the line. The chart would catch the gross, if I may use that term, violator because, I think, the chart by necessity has to be quite conservative.

Dr. Meyer: The thought occurred to me, too. Yesterday we were talking about this problem of these teams, and so on, and that maybe some sort of less sophisticated gross screening system ought to be developed along the lines of the little British lighting-up sound level meter that identifies people who are obviously violators. But you send them around to be checked because you are going to do something about it. I would hope that everybody concerned with this problem will look at this idea a little bit more intently, rather than just the very sophisticated system as being the only one.

Do you have a comment, Hank?

Mr. Martin: Dick, perhaps just for some of the other fellows on the panel, one of the things that has been questioned is the possibility of putting the microphone closer. Now, you mentioned the fact that you want to keep it 50 feet away, as our procedure calls for, but there are cities where, you know, 50 feet presents a problem. Maybe you can elaborate for some of the people and for the record just what the problems are when you move in closer, say, to the ISO. What is it, 23, 25 feet?

Mr. Staadt: Well, first you get into the near field. Also, you may have several sound sources from one vehicle and, if you get close enough, you measure each one of these individually as each one passes your microphone, where in the future you intend to integrate all of these sources into one total, which is really what the bystanders hear, is the integrated sum of all of these sources on a particular vehicle.

Mr. Baron: As I listen to all of this on testing, I am just wondering. I get the feeling that somehow or other eventually the whole decibel system is going to be done away with. There's so many variables, and talking about such finite, precise measurements in a way of half decibels, and I know, with all due respect to the averaging concept, that one-half decibel, even one decibel, is—I don't believe there is that kind of precision in the measurement system. And wind and temperature, and so on. If, in the long run—if you don't believe that an expansion—that there should be an expansion—an exploration, a serious one, in depth, of a technique for measuring noise.

Mr. Ringham: Of course, the thing that's measuring the noise is a microphone, which is a thing that is generally pretty sensitive to noise. A decibel is just a simple expression referenced out of a log right at the microphone approach to defining numbers. The Committee thinks you need some kind of a reference system. But the whole point is, the key thing you are measuring with is a microphone, and until we invent something other than a microphone to measure with, we are going to be measuring pressures and be relating to them the measure of pressure. And all a decibel is in this system is a measure of pressure.

Dr. Plager: If I may—I don't want the group or the record to be left with the impression that this is really that difficult a problem. You know, the courts, which, after all, will be the ultimate enforcement decision maker, are used to dealing in very general kinds of terms, such as "excessive noise." We are now refining it remarkably to a point where we are talking about half decibels. I think that's a remarkable degree of refinement, and I don't believe that the courts will have very much difficulty with feeling that that's not a sufficiently accurate measurement.

Mr. **Staadt**: I, again, would like to emphasize that half decibel measurements are not normally something that can be measured along the road in a surveillance situation. I think that any enforcement body would have a hard time making a half decibel reading over the limit hold, because there are too many variables involved. Half decibels are mentioned here and used strictly because this was an engineering test in which we were controlling as many factors as possible.

Again, in surveillance, half decibels will never come into the picture, I'm sure.

Dr. **Meyer**: Well, fine. Thank you very much. This was a stimulating discussion, and it is very important.

Now we should like to move on to another measurement activity. Some people may lose their hearts in San Francisco, but the next gentleman comes from a place which there's no place like, namely, Nebraska. Dr. Steinbruegge of the University of Nebraska.

STATEMENT OF G. W. STEINBRUEGGE, UNIV. OF NEBRASKA

Dr. G. W. **Steinbruegge**: Gentlemen, in the past several years we have become increasingly concerned about pollution and its effects upon our lives. We are told that noise is one of our most serious pollutants and that noise pollution is increasing at an alarming rate. The ultimate hearing loss which may result from prolonged exposure to noise is of great concern to us, but we are also concerned about the irritation and discomfort which such noise may produce and which is detrimental to our productivity and well being.

Farmers and ranchers living out in the country are not exposed to as much neighborhood noise as are city people, but in the course of their work they are frequently exposed to more prolonged occupational noise than are many city workers. Much of this noise comes from the tractor which the farmer operates.

Noise has been associated with tractors since their earliest beginnings. As tractors have increased in size and power, their noise levels have increased also. The operators of some of today's tractors are exposed to sound levels in excess of 100 decibels. It is generally recognized that exposure to sound levels of over 100 decibels for extensive periods of time causes a progressive loss of hearing.

Tests at the University of Nebraska speech and hearing laboratories indicate that entering male freshmen coming to the University from the farm experience a greater loss of hearing than their city counterparts. This extra hearing loss is attributed, at least in part, to the exhaust noise of tractors the young men have operated before coming to the University.

Tests conducted in June 1965 by the Division of Environmental Health and Safety at the University of Nebraska indicate that of 55 tractors tested for noise at three different drawbar loadings, every tractor, except one, exceeded a noise level of 96 dB (linear) at the operator's ear. The one exception showed a noise level of

90 dB (linear) at 50 percent drawbar load. Tests on other kinds of farm machinery (combines, corn-pickers, snow blowers, power saws, etc.) show noise levels as high as those found for tractors.

In 1966 the Department of Agricultural Engineering conducted a study on the effect of exhaust pipe length on noise at the tractor operator's station. It was found that an 18" vertical extension on the exhaust of a typical tractor reduced noise by as much as 5 dB on an open platform tractor, and by as much as 3 dB even if the tractor had a cab. It was also determined that in some tractors the operator, when sitting, was subjected to noise 2 to 3 dB louder than when standing at his work. This additional noise was attributed to increased gear noise and hydraulic system noise under the platform upon which the operator stood. Most startling of all was the fact that a 7 to 8½ dB increase in noise occurred at the operator's station when a cab was mounted on the tractor.

As a result of these and other tests conducted by the University of Nebraska and by a growing number of interested organizations around the world, together with the fact that Nebraska farmers expressed a need for sound level tests with which to judge the relative sound levels of different tractors, the Nebrasks Tractor Testing Laboratory, in the spring of 1970, instituted an official noise test for tractors offered for sale in the state of Nebraska. These tests are based upon a tractor sound test procedure developed with the help of the Tractor Test Code Subcommittee of SAE. A copy of the procedure is attached hereto as Appendix A. A brief history of the purpose and activity of the Nebraska Tractor Testing Laboratory is given in Appendix B. Some typical tractor test reports showing how results of the sound tests are made available to the public are attached as Appendix C.

The approximately two years of noise testing we have done at Nebraska has given us an excellent opportunity to look into the special problems associated with the measurement of tractor noise; and problems there have been. At the same time, some of the things we first thought might present a problem to us did not materialize as a problem at all. Therefore, I briefly relate some of the experiences we have had while developing our tractor sound test procedure and putting it into practice. Perhaps this may help you in establishing any future standards or test procedures for tractors and similar equipment.

Background noise. Any sound measurement includes the effect of noises in the surrounding area. It is generally conceded that if the noise of neighboring equipment is 10 dB(A) or more below the noise level of the tractor being tested, the background noise may be neglected. We test tractors by putting specially converted tractors behind the tractor to be tested to act as load units. These load unit tractors contribute to the overall noise but do not raise the background level above 72 dB(A). Therefore, we can test tractors down to 82 dB(A) without special attention to the background noise level. If for any reason, however, the noise level of open platform tractors is to be less than 82 dB(A), special problems will be encountered in the development of adequate test equipment.

Noise reflection. Noise may be reflected from an object to produce an echo. If noise measurements are made within about 50 feet of echo-producing objects, the noise level may be unnecessarily raised. We have an earthen bank near one end of our test track and the reflection from this bank makes a measurable difference in any noise readings taken near the bank. We never take official readings near this bank. We had three trees removed from an area near that part of our test track where we do take our noise readings because of our concern with possible reflection from these trees. We were also concerned about the reflective effect of our test car which has a frontal area of approximately 40 sq. ft. trailing not more than 10 feet behind the tractor being tested. Extensive testing for reflective effects from our test car show that no measurable effect is present. This is contrary to the effect found at the NIAE testing station in England where they pull their test car at the end of a 20-foot chain to reduce the effect of test car generated and reflected noise.

Location of the microphone. One problem about which some tractor manufacturers have shown extreme concern relates to location of the microphone with respect to the tractor operator. It has been found by these manufacturers that moving the microphone about four inches farther from the operator results in a significant reduction of observed sound level. This is especially true with respect to tractors with cabs. It was concluded that reflection from the head of the operator was influencing the sound level readings and causing some test results to be too high. Additional testing by the Laboratory has shown that although the presence of the operator may tend to cause reflection and a slight rise in the measured sound level, the presence of the operator also results in an acoustic shadow which may tend to reduce the sound level as measured. Furthermore, the tractor cabs tested showed that the contours of sound level inherent within the cab result in lower sound level measurements as the microphone is moved away from the center line of the cab, even when the operator is not in the cab. As a result of our observations, we are continuing to measure the sound level in cabs near the operator's ear as we have done in the past.

Noise in "roll-bar" cabs. Some tractor cabs are made with an exterior skin sufficiently strong to withstand the stresses encountered in an accidental roll-over of the tractor. In other cabs, roll-over protection is achieved by use of a "roll-bar" incorporated into the cab design. Roll-over protection is something that should be strongly encouraged. However, since the roll-bar is fastened quite solidly to the axle frame, it may transmit axle frame vibrations to the panels of the cab which may act as sounding boards. Thus, the location and orientation of the microphone may be more critical in "roll-bar" cabs and present measurement problems not found in other cabs.

Units for reporting noise level readings. Noise levels are customarily reported in dB(A) or in sones. We at Nebraska want to use that unit which best conveys to the uninitiated consumer a proper understanding of the amount of noise being reported. The dB(A) is a weighted decibel unit based on a logarithmic scale. Most of the non-mathematical public has no concept of logarithms or a feeling for logarithmic relationships, yet references to decibels are widely used with regard to hi-fi systems and on television programs and commercials. On the other hand, sones are linear in nature and easily explained and understood mathematically. Sones, however, are almost unheard-of by the public. In deciding which unit we wanted to report our tractor test data in, we had to decide between use of a complicated but somewhat well-known unit, the dB(A), and an easily understood but rather obscure unit, the sone. If we used sones, we might have to educate the whole country; if we used both, we might throw a lot of confusion into the situation because sones and dB(A) are not directly transferrable one to the other. We settled on using dB(A) as the unit to report our sound tests in because our education problem would be a lot less.

At our 20th Annual Tractor Power and Safety Day, which was held on July 29 of this year, we included a sound level booth as a part of our education program. This sound level booth was used to demonstrate the intensities of tractor noises of various levels. In this booth we continuously played a recording of tractor noise. There was a volume control in the booth which could be operated by the public and there was an indicator which showed where to set this volume control so as to have a noise in the booth of 80 or 90 or 100 dB(A), or anything in between. The farmers were invited to step into the booth and control the sound as they wished, and thus they could hear how loud 100 decibels really was or how much a change of, say, 3 decibels would make in the noise of a tractor. In this way we introduced several thousand people in the concept of dB(A) and associated it with actual tractor noise level. The booth proved quite popular and we plan to use this booth in our program again next year.

Resonance of tractor noise while under test. We have found on some occasions that a tractor under test will develop a resonance within the cab after 300 or 400 feet of pulling a constant load. This resonance tends to raise the sound level at the operator's station. It is suggested that sound levels of tractors being tested under load be recorded after at least 300 feet of constant load travel to insure greater uniformity of test data and permit better comparison between tractors.

At Nebraska, we have developed our sound test procedure with the idea that we are to provide tractor operators with a sound level figure that represents the best measurement we can make. Basic to our philosophy has been the idea that we are not testing tractors for noise but, rather, are determining the noise to which the operator will be subjected. This includes the effect of the operator himself as he might influence the noise as it might reach his ears.

We feel that the sound level test procedures used at Nebraska are reliable, fair to the manufacturer, and provide useful information to the consuming public. Certainly, however, the procedures can be further improved upon. We shall be glad to cooperate with any organization which desires to effect such improvement or to introduce new test procedures for the protection of the health and safety of the tractor-operating public.

Dr. **Meyer**: Thank you very much, sir. I must make the comment that your opening remarks regarding audiometric examinations of farm children as compared with city children is most startling. Everybody thinks it's quiet down on the farm, but apparently it's not.

I am going to ask you, if you don't have it with you, if there is some way we could get some information on the specific numbers of people in each group tested. I think it would be most useful for our records. Is there any way we could get the data from your studies.

It is my understanding that Dr. Duchette, who has done this work, will be at Denver tomorrow or the next day. I will discuss this with him. It is most illuminating. I had no idea that that situation existed, although I guess one could have expected it.

Panel?

Mr. **HILDEBRAND**: What has been the reaction of the tractor manufacturers to your testing?

Dr. **STEINBRUEGGE**: They are a little reluctant to let us know what their reaction is. I really can't say.

Mr. **HILDEBRAND**: They haven't evidenced displeasure?

Dr. **STEINBRUEGGE**: I would say they have evidenced some displeasure, but certainly not supreme displeasure. We get a good deal of cooperation from them at times, but at other times the cooperation is a little reluctant.

Mr. **HILDEBRAND**: Who reads the specifications, the published sheets, the spec sheets that are attached to the Appendix C? Are they at the dealers?

Dr. **STEINBRUEGGE**: These are available to anyone who wishes to send for them.

Mr. **HILDEBRAND**: I see.

Dr. **STEINBRUEGGE**: They are used by farmers and dealers, and trade magazines publish them, and so forth. They are quite widely used.

As a matter of fact, in 1965, as a result of a request from one of our State Senators, we determined that some two million copies of this gets around in one year.

Mr. **HILDEBRAND**: Thank you.

Dr. **PLAGER**: In this little red book, I notice—I guess this is your latest publication on it?

Dr. **STEINBRUEGGE**: That's right.

Dr. **PLAGER**: I notice a number of them don't have dB(A) numbers there. What does that mean?

Dr. **STEINBRUEGGE**: They were tested before 1970. You will find approximately 30 in there which we tested last year which are now included in the book. At the end of this year we will have tested about another 30, so our 1972 edition will have about 60.

Dr. **PLAGER**: But you don't carry the old data over?

Dr. **STEINBRUEGGE**: We didn't test the old ones; that was before 1970.

Mr. **BARON**: I noticed you did use—Does this explain why you used linear decibels in one reference on page 2? You refer to—

Dr. **STEINBRUEGGE**: I really don't know why those—who ran this particular test used the linear. We have more or less standardized on using dB(A).

Mr. **BARON**: Do you think it's because it was an earlier test?

Dr. **STEINBRUEGGE**: I think so, yes.

Mr. **Baron**: And does Nebraska have workmen's compensation for hearing loss?

Dr. **Steinbruegge**: Yes, they do.

Mr. **Baron**: Then would it be your understanding that under these conditions the farmers would be entitled to it?

Dr. **Steinbruegge**: I don't know. I can't answer that.

Dr. **Meyer**: That's a complex subject, Alex. I have lived in Nebraska for several years while I was stationed there in the Air Force, and knew a lot of people in their Health Department. And this workmen's compensation, as it affects self-employed people and farm workers, is a complex legal problem which I am not prepared to get into. We could find out for you and let you know.

I have a couple of comments, sir, before moving on.

First, I would like to compliment you on a very excellent presentation and the fact that your state and the University have indeed, seen fit to undertake such an effort. I am also most interested in your noise demonstration and note you are going to continue to use it. We might like to discuss with you the possibility of arranging a joint demonstration with you, perhaps at one of the state fairs or talk to you a little bit about some joint efforts, because it sounds like a very—

Dr. **Steinbruegge**: We should be glad to cooperate with you.

Dr. **Meyer**: It's a very useful thing, and I shall write you about that within the next day or two, or talk to some of the other people at the University who are going to be over at Denver.

The only real question I had was: Has there been any effort to make information like this available through the Agricultural Extension Service as a routine thing? I mean not only the noise problem from the tractor per se, but just the noise, since this highlights it and it is a big exposure, obviously. Is there any effort through the Agricultural Extension Service to call this to people's attention, the need for precautions and for finding out what kind of noise does exist from the tractors?

Dr. **Steinbruegge**: Yes, I think that they have been doing a pretty good job of bringing this information to the people

Dr. **Meyer**: My last comments is that your discussion regarding sones versus dB(A) does highlight these scientific semantics. Some of the people in the various scientific disciplines have no difficulty, though, confusing the public by getting together and agreeing through that standards organization about changing common usage to something else.

For instance, we went from the very simple cycle per second, which almost anybody can sooner or later figure out, to the memorialization of Mr. Hertz, or Dr. Hertz, by calling it hertz, so I am not really too worried about adopting more simpler things, even if they are not in widespread usage.

Thank you very much, sir. I appreciate it very much. Your presentation, was a very good one, sir.

I would now like to ask the representative of another interest with regard to noise standards and measurements, Mr. Ralph Hillquist of the Noise and Vibration Laboratory of the General Motors Proving Ground in Milford, Michigan to come forward.

Mr. Hillquist, welcome here, sir. Glad to see you, and am looking forward to your paper, sir.

STATEMENT OF RALPH HILLQUIST, GENERAL MOTORS CORP.

Mr. **Ralph K. Hillquist**: Mr. Chairman and members of the Panel, my name is Ralph K. Hillquist. I am an engineer with the Noise and Vibration Laboratory of the General Motors Proving Ground at Milford, Michigan. I am here to present General Motors' viewpoint primarily with respect to standards and measurement techniques for motor vehicle noise.

STANDARDS AND MEASUREMENT METHODS

To begin with, a technically proper motor vehicle noise standard must consist of both a sound-level criterion and specific measurement procedures or conditions. This is because the sound level determined in a prescribed situation is dependent on the operating mode of the vehicle, distance between the vehicle and measuring instrument, and the physical and acoustical characteristics of the propagation path and immediate surroundings. Thus, in discussing noise standards, both sound level values and the circumstances under which they are obtained must be considered together.

Standards are necessary for several reasons. One of the main reasons is to create a common ground of understanding so that meaningful discussions based upon comparative data can take place. Thus, we may speak of an "A-weighted" sound level, which has a universally accepted meaning. If obtained by a test procedure which also has an accepted meaning, we may then discuss the results as they relate to a particular vehicle without undue fear of misinterpretation or misunderstanding.

Finally, to provide maximum effectiveness from the use of a standard in the regulatory process, the standard itself must have widespread acceptance and also be responsive to problems in the area where it is to be used.

EXISTING TEST METHODS

As indicated in GM testimony at the Chicago EPA hearing, on July 28, 1971, GM does not necessarily endorse existing test methods or noise regulations. We feel that existing measurement and assessment techniques can be improved and that test methods more representative of actual vehicle operation within the community must be devised. This in no way is meant to detract from the technical foundation for existing test procedures, but, rather, to suggest that refinements in test methodology are needed.

Several standard test procedures have been promulgated for determining exterior nose of vehicles intended for highway operation. Of these, two are in common use today and are referenced in several noise regulations. These are the Society of Automotive Engineers (SAE) Standard J986a and Recommended Practice J366a, which provide the basis for determining sound level values for passenger cars and heavy trucks, respectively.

Both test methods call for controlled vehicle operation on a test site meeting certain specified requirements. Vehicle operation during the test typically involves high engine speed with low vehicle speed. This is intended to provide for repeatable, accurate sound measurements and to emphasize engine and power train noise to the exclusion of the more variable tire and aerodynamic noise. Thus, these tests provide measurements of those vehicle noise characteristics most directly controlled by the vehicle manufacturer. Unfortunately, these characteristics are not completely representative of typical noise emission during highway operation.

MEASUREMENT DISTANCE

The SAE procedures which are the basis of most tests used in this country specify that the microphone be located 50 feet from the vehicle path centerline. This measurement distance was initially specified on the premise that the measurement made was representative of the total noise emission of the vehicle. Consideration was also given in the procedure to the response characteristics of the indicating meter and to the ability of the test observer to read the meter accurately. Close microphone spacing and high vehicle speed are factors which produce rapid needle motion. This, in turn, makes it difficult to determine the peak value with any confidence.

On the other hand, the 50-foot distance may preclude measurements in urban areas, due to insufficient clear space. Consequently, the whole test procedure has been criticized on that basis. The 50-foot distance requirement was developed to provide meaningful and repeatable measurements of vehicle noise on a prescribed test site. However, the problem of enforcement tests, particularly in municipal areas, is really a separate one which should be given its own consideration, and it may or may not include a 50-foot measurement distance.

The feasibility of making valid noise measurements at points closer to the vehicle path than 50 feet is currently being studied by General Motors. Such measurements would correspond to exposure conditions in urban areas and, if realistic, would relax test-site requirements for enforcement action.

UNDERSTANDING OF TEST VARIABLES

Recent test work at the General Motors Proving Ground indicates that good repeatability of test measurements is dependent on more than careful vehicle operation during the test. In controlled experiments, test parameters such as ambient temperature, relative humidity, wind speed and direction, test driver, and even test site, and have been studied in order to determine just how much effect variations in these conditions will have on test results. As an example, nearly 500 test runs were made by GM on each of two cars in the first six months of this year, solely to investigate ambient weather effects.

While we are unable at this point in our testing to quantify the effects, we do know that measured noise levels increase as ambient temperatures decrease. It is also evident that some vehicles are more sensitive to temperature changes than others. Furthermore, it has been discovered that presently unexplained variations exist within test results from samples of the same make and model vehicles, which have the same power train components. Thus, two vehicles which are identical, for all practical purposes, will produce different noise levels even when tested under the same conditions and test procedures. Consideration should be given to such possible variations in test parameters by any agency issuing standards. This can be done most simply by provision of a tolerance in the sound level criterion.

RELEVANCE OF SAE PROCEDURES TO URBAN NOISE PROBLEMS

A further criterion for the acceptance of a standard test procedure is its relevance to problems in the average community. That is, a vehicle noise test should be representative of community exposure to anticipated vehicle operations. Inasmuch as heavy trucks and buses are typically operated at or near maximum power much of the time, a maximum noise test such as that prescribed by SAE Recommended Practice J366a appears appropriate. Revisions or refinements of the procedure may be necessary as vehicle designs or configurations change, but the overall test philosophy seems to be acceptable at this time.

This is not the case, however, for the test procedure currently specified in SAE Standard J986a for passenger cars and light trucks. The procedure involves maximum acceleration of the vehicle from 30 mph. This is not a typical operating mode, and is not representative of most common exposure situations. Thus, only one extreme mode of the many operating conditions possible is tested by this procedure, while other normal operating modes, such as acceleration from a traffic light or expressway traffic, are not.

Further, a bias exists within the procedure favoring the moderate-performance "average" car over the high-performance vehicle. This is because the high-performance car has the capacity to reach high engine speed more rapidly within the test zone than does the "average" vehicle. The propriety of such a bias in the testing procedure has not been investigated to determine whether it should be continued. This study should be made.

Our considered opinion at this time is that a noise test procedure more representative of typical operating modes within the community, with continued consideration of extreme operation, is desirable. This may be a multi-mode test, comprising procedures for the true maximum noise, part-throttle acceleration, idle, steady-speed or cruise, and perhaps deceleration. Consideration needs to be given both to the vehicle as an individual noise source and as a contributor to multiple-vehicle situations, such as expressway traffic.

Consideration must also be given to the measure used for vehicle sound level. While the currently popular A-weighted sound level is probably adequate, it has not been verified as a reasonable predictor of subjective reaction to the many operating modes of passenger automobiles. Such validation of this measure needs to be made, particularly for single passenger vehicle events, as has been done for individual trucks. Until this validation is provided, there will be some uncertainty that noise regulations for passenger cars based on the A-weighted scale will eliminate the objections of those who are exposed to that type of noise, and thus solve the problem for which they were developed.

This completes my statement on standards and measurement techniques. My comments have also touched upon the technical side of the enforcement problem, although I have not addressed myself specifically to that part of the problem. Finally, although I am not an expert in legislative and regulatory matters, I would like to submit General Motors' views as to the factors which should be involved in considering legislation and possible administrative regulations on the subject. These viewpoints have been fashioned after considerable experience on the regulated side of numerous state and federal laws on safety, air pollution and noise control.

VEHICLE NOISE LEGISLATION

Due to the fact that several states and some cities are now regulating noise, including standards for vehicles, a federal law should be enacted to authorize the establishment of standards and test procedures which will prevail in all states and cities.

However, such a law ought to provide only the basic regulatory power in the statute. It should not "freeze" numerical standards or test procedures into statutory language. The Administrator should be given authority to issue numerical standards which are economically and technologically feasible, as established by evidence submitted at public hearings.

(1) A statute regarding vehicle noise standards should be phrased in terms which regulate performance, not design of the product. Also, these standards should be practicable, should provide objective criteria, should specify that test procedures for measuring noise generation are part of the standard-setting process.

Any numerical standard issued should be relatively flexible so that it can be modified as technological progress dictates. For example, sound level criteria may require alteration as new test parameters or operating procedures are developed and are accepted in the scientific community. Having this flexibility may well determine the speed with which the technical solutions can be applied to the problem.

(2) Regulation of new motor vehicle equipment to control noise may conflict with equipment requirements for safety and air pollution control. Therefore, a priority should be established which would permit noise considerations to yield if conflicts with equipment requirements of more pressing problems occur. For example, tire noise can be reduced with today's knowledge, but only if traction on wet highway surfaces is sacrified. In this type of conflict, the more important safety consideration should prevail.

(3) Regulation, particularly in the states, which prescribes noise levels for motor vehicles that are well beyond the reach of current technology can be counter-productive—even though long-range effective dates are provided. Cost-benefit considerations should play an important role in weighing the advisability of this type of regulation. The validation tests suggested previously should help establish noise levels for individual vehicles which are acceptable to the public. These publicly acceptable levels may be significantly higher than the extremely low levels being proposed in some circles. Since such low levels cannot be achieved without adding significant new costs to the vehicle, the value of this extreme approach should be questioned.

(4) In view of the fact that several states and some cities already regulate vehicle noise, a strong preemption clause should be contained in any federal law which authorizes the issuance of national noise standards. This would help lessen possible conflict

between a new federal law and existing state laws. However, even though the states are preempted from the standard-setting activity, there is much to be said for permitting the basic enforcement program against vehicles in use to take place at the state and local level, perhaps by vehicle inspection or passby tests.

CONCLUSION

I have discussed briefly the existing vehicle test methods, pointed out some of their shortcomings, and suggested possible improvements. Within General Motors, several high-priority programs are being conducted in an effort to propose satisfactory alternatives to present techniques. For example, test variables such as ambient weather conditions, measurement distances, and instrumentation requirements are being investigated thoroughly. In addition, traffic surveillance techniques are being implemented in order to establish typical or average operating modes, such as acceleration from traffic signals, during passing maneuvers, and so on. Based on this information, testing methods will be devised, and evaluated for acceptability to both the community and the testing agency.

It is General Motors' policy to disclose the results of these programs as they become available. As an example, our findings on test variability have already been discussed at the spring meeting of the Acoustical Society of America. Further results will be presented to the same technical body in a few weeks. Finally, a summary of GM's vehicle noise testing experiences will be presented to the Society of Automotive Engineers' national meeting next January.

The data submitted to the spring meeting of the Acoustical Society is attached to this statement for your information. When the summary of vehicle testing procedure is available next January, we will forward a copy to you.

We appreciate this opportunity to discuss motor vehicle noise standards at this hearing.

Thank you.

Dr. MEYER: Thank you, sir, for an extremely forthright and comprehensive discussion of your corporation's activities and also its firm views regarding the matter of standards measurement and legislation.

Before asking my panelists if they have a brief comment or question—and I am going to ask them to keep them reasonably brief because of our time—I noted with—I won't say "dismay", but some concern—the findings that you very candidly report that in this testing program that you understook to test the test, more or less, you are finding that two vehicles which are identical for all practical purposes, under extensive test conditions, produce different noise levels, particularly since one of the concepts of noise control standards will be production testing, along with a test in the field. And of course, if you can't get reproducibles, it's going to be kind of hard to come up with a reasonable standard.

Mr. HILLQUIST: Well, it was dismaying to us, also, as you can imagine.

Mr. HILLQUIST: Basically what we have done is confirmed that statistics are, in fact, a very real part of our life.

Dr. Meyer: Yes. The minute you say the problem is 88±2, we will say, then the next thing that happens, that's the only thing you get. And as I have said earlier, what you hope is people try to get a heckuva lot better than the standard. So the minute you go into that sort of terminology in a standard, you sort of are assured that you are going to be somewhere between 86 and 90, you know—You know what I am saying here?

Mr. Hillquist: Yes.

Dr. Meyer: And I just wonder if you have given much thought, since you all would be affected, as to what's the way of coming to grips with this difficulty.

Mr. Hillquist: It would be—probably have to be couched in statistical terms, and would have a given probability or a given assurance that X percent, 95, 98, 99.9, of the vehicles produced, based on statistical testing, would comply with some regulated value.

Dr. Meyer: This is a matter we are going to have to, I am sure, get into a considerable discussion with you and SAE and ANSI and other groups, in order to come to grips with this.

I will yield now to Mr. Martin.

Dr. Dietrich: I, too, am interested in this problem that I assume you are just describing as one that could be otherwise related to the manufacturing tolerances in any mass-produced pieces of equipment. I am reminded of the thought that the existence of manufacturing tolerances does not require the buyers to accept automobiles with sheet metal stack-up errors so bad that the door doesn't fit in the opening. And I just wondered whether you were really suggesting to us that we should, in the case of noise, take a different view and accept it—

Mr. Hillquist: That isn't what I said.

Dr. Dietrich:—in excess of the public chosen limit.

Mr. Hillquist: I said that let's all be aware that these variances can exist. But I also said that those that exist, it's the performance of the product which is our problem when it comes to meeting a limit.

Dr. Dietrich: Your problem.

Mr. Hillquist: If you happen to get one 6 dB(A) under what everybody else is, you are not going to turn it back in; right?

Dr. Dietrich: No. Right. All right. And I am glad to have that clarification.

I wonder if you might enlighten us, if you can, about a view that you might have with respect to self-certification requirements, such as those presently in the National Motor Vehicle and Traffic Safety Act with respect to the safety performance. And in the case of noise, I believe the City of Chicago has something not unlike that, which would say that you guarantee that all vehicles at least meet some limit, and the statistics presumably known to you enable you to have confidence internally that this is so.

Mr. Hillquist: That's correct. We are doing that now with the various safety proposals. We have been selling cars in this state since 1968 on that basis, which amounts to a self-certification, and also the certification requirements of the Chicago ordinance.

Dr. Dietrich: So—In other words, so that I don't misunderstand what you are saying, is that you understand that you just want us to be sure that we understand that you have had to go to this trouble? It wasn't as simple as it might appear on the surface?

Mr. Hillquist: Yes. I think most significantly, though, are the temperature and environmental, if you will, the weather conditions that are most disconcerting because these are the ones that really affect you.

Dr. Dietrich: Yes, and we appreciate your flagging this one at this time.

Mr. Baron: Well, let me just interpret your remarks that add up to the fact that the reduction of noise of passenger cars and trucks will be accomplished at a later date. Then we would hope—in other words, are you asking for waiting time while the standards are approved?

Mr. Hillquist: I think it's going to be accomplished as soon as it all can be done, with a lot more grief on my part, Alex. But I don't think we are going to use that as an excuse to hold off some immediate noise reduction, no.

Mr. Baron: Thank you.

Mr. Hildebrand: I am sorry I didn't think of this question earlier when the standards people were here. If you wish to—to try and make Mr. Martin come to rescue, if needed, that will be quite all right, too.

You state that the 50-feet measurement distance—and it was stated earlier also—is used in order to get total vehicle noise. Correct?

Mr. Hillquist: That's correct.

Mr. Hildebrand: And then in your testimony you stated that General Motors is studying methods for closer testing than 50 feet. Could you describe what you mean by that? What other methods, or are you just testing the—

Mr. Hillquist: The work I am talking about specifically is one program that I got information on as I was coming out here. Even where we made measurements with a variety of—a series of microphones at different spacings to see if the measurements all related, as we expected they would from the laws of physics—

Mr. Hildebrand: Variation of separate meters?

Mr. Hillquist: Yes.

Mr. Hildebrand: Variation of certain meters?

Mr. Hillquist: Yes.

Mr. Hildebrand: My question is: Why not take two microphones and space them the distance of the vehicle and then take the mean average—not the average, but take the mean of the total or some other function of the total input of noise, or perhaps take 10 microphones 10 feet away?

Mr. Hillquist: Pardon my smiling, but you have hit on one of my favorite little things, and this is a personal prejudice of mine. I have been at the testing guys long enough and I have had enough inputs, some even from Alex, who says that even one sound level meter is too many to this extreme. Well, why can't you put 10 miles out there?

Mr. Hildebrand: No, I mean 10 mikes all connected to the same sound meter.

Mr. Hillquist: That has some practical implementation problems as well, but my own feeling is that test measurements can be made with a single microphone. We need to have simple tests in that respect.

Mr. Hildebrand: Right, but—All right, but what about two microphones four feet apart? That would take in most of the vehicles hooked to one sound meter and then take a function of whatever the result is.

Mr. Hillquist: I don't think that you would materially improve on the reading from the—one of them individually.

Mr. Hildebrand: At that distance?

Mr. Hillquist: Correct.

Mr. Hildebrand: Well, if the microphone were at the front of the car and you take a reading, you would get the—you would get the noise that emitted from the front of the car but—I mean, you would get the noise emitted from the back of the car, but if you take two microphones, one at the front and one at the back, and run them through a single noise meter, and then fractionalize or take a logarithmic function of your total reading, you might be able to get the total noise picture at that close distance.

Mr. Hillquist: You are aware that the vehicle is moving during the course of the test so that microphone which is at the front of the vehicle, that time period later, it is at the rear. And you have two single microphones recording the same event, with some displacement in time or distance.

Mr. Hildebrand: I see. And then one more question. Is General Motors using computers on this—in this testing—

Mr. Hillquist: Not in terms of the—

Mr. Hildebrand:—analysis?

Mr. Hillquist:—elegant techniques that have been described earlier. We do use current sound analysis equipment. We do use computers, particularly as it relates to the handling of the data on a statistical basis.

Mr. Hildebrand: Right. On that basis, would it be possible to create a data bank having information on tire noises, on wind contour noises coming over the car, exhaust noises, engine noises, and then take your reading and tell your computer to hear only certain aspects of the noises? Is that possible? In other words, put an information grid in your computer so that you can then ask your computer, "Well, what was the engine making during that pass?"

Mr. Hillquist: Bear in mind, now, a computer is only as smart as the guy that puts the information into it.

Mr. Hildebrand: I realize that, but if you tell a computer that a bird makes a certain sound, a certain pattern in its chirp, and a lion makes a different sound, and then you give the computer both sounds and he can figure them both out, and you can give them to him at the same time. And if there is enough difference in the pattern, you can distinguish between the two?

Mr. Hillquist: If there's enough difference. And, by and large, most of the noises we deal with are very much alike. They don't lend themselves to this voice print—if you will allow me that description—that you are alluding to.

Mr. **HILDEBRAND**: I see. Thank you.

Mr. **BARON**: May I just ask what budget is spent on measurement techniques in the program you are talking about, approximately?

Mr. **HILLQUIST**: I can't answer that in terms of dollars because I don't know.

Mr. **BARON**: Or the number of man hours?

Mr. **HILLQUIST**: We have got about 20 people right now working full time on the programs I am talking about right there.

Mr. **BARON**: Does this include noise reduction or just noise measurement?

Mr. **HILLQUIST**: I am talking specifically about work done by the Noise and Vibration Laboratory at the Proving Ground, the work by myself, the people that work with me, and the people that work alongside of me. All of them are in the Division of Noise. The Car Division, the Truck Division, the Earth-Moving Equipment Division, they have their own product work going on.

But in talking about test methodology and the sort of thing that I talked about in the testimony there, that is the—the people at the Proving Ground, which is, like I say, right now about 20 people.

Dr. **MEYER**: I think, if I recollect the figure given in Chicago, it was something like a total of 120-some-odd people—corporate businesses; somewhere between 120 and 130 corporate businesses involved in noise measurement, noise control activities. And if I recollect, then your group involved with measurement, and so forth, would be in that sum. Is this correct?

Mr. **HILLQUIST**: That's correct.

Dr. **MEYER**: Those were the figures that were given us, I believe, so it is a fairly substantial number of folks directly tied in with something called Noise and Noise Measurement.

Does that answer your question, Alex?

Dr. **PLAGER**: Mr. Hillquist, I wonder if you could give us some idea of the range of this difference that you are referring to. "Two vehicles, identical for all practical purposes, produce different noise levels tested under the same conditions." Are we talking about 8, 10 decibels?

Mr. **HILLQUIST**: One or two. No, it's not that great. We ran some four car samples and so you are playing pretty gutsy statistics with only four, and we were getting ranges from as little as, say, plus or minus half a decibel to perhaps plus or minus two. But when you plug that kind of a range into a computer program, why, you start blowing your confidence limits way out, just because of the small number tested.

We have a program going on to use larger samples to better pin down what this means.

Dr. **PLAGER**: It's possible that that larger sample might show that the maximum range you now describe as being somewhere around 2 might actually, in fact, occur in a very small percentage of the cases?

Mr. **HILLQUIST**: That's correct.

Dr. **PLAGER**: But we don't know that yet?

Mr. **Hillquist**: That's correct.

Dr. **Plager**: So your suggestion is that provision of a tolerance in the sound level criterion, the tolerance might actually, indeed, then not be very large in order to meet the problem you are raising here?

Mr. **Hillquist**: The one we have been living with, if you will, for all these years has been two decibels.

Dr. **Plager**: All right. I am sensitive to the Chairman's concern about moving the hearing along, and I would hope that perhaps at some point we could get some detailed information or testimony on the magnitude of General Motors' effort in this noise area in terms, for example, of the relationship of the noise program to new product design, for example.

How does General Motors' effort in noise abatement and improvement compare to its effort in coming up with new designs for new models? Probably you are not the best one to give us that information—

Mr. **Hillquist**: That's very correct.

Dr. **Plager**:—at this time.

Mr. **Hillquist**: That's right.

Dr. **Plager**: I thought that might be the case. You make a couple of statements that I do want to quickly point to and get your reaction to.

One is, you make the statement that cost benefit considerations should play an important role in weighing the advisability of this type of regulation. Was—I take it you have been here a while. You may have heard our Chairman's reference to a little different concept which he calls cost effectiveness. Are you familiar with that little colloquy?

Mr. **Hillquist**: I think they were bantering about semantics for the past two days. We are all talking about the same sort of thing, I think, very much.

Mr. **Plager**: You make the statement, "Regulation, particularly in the states, which prescribes noise levels for motor vehicles that are well beyond the reach of current technology can be counter-productive—even though long-range effective dates are provided." Would you tell us why you think that's counter-productive?

Mr. **Hillquist**: We have—Admittedly, in any effort, whether it's General Motors or anyone else, a finite amount of manpower, if you will, or effort that can be put to any given thing, if that's spent in the wrong direction or essentially spinning our wheels, we haven't achieved anything. The community problem hasn't been solved because some effort was misguided at the very beginning. That's all I mean by that. We would like to solve the problem.

Dr. **Plager**: I don't see how the effort—

Mr. **Hillquist**: You do it in the most expeditious way.

Dr. **Plager**: How could the effort be misguided if the effort is directed in terms of reaching a lower level of noise?

Mr. **Hillquist**: Perhaps in the manner by which it gets there, or the fact that priorities have been put on wrong things.

Dr. **Plager**: And you might not have the manpower or resources to address that particular problem?

Mr. **Hillquist**: Within the given time frame, yes.

Dr. **Plager**: This does make it more important to understand this problem that we have a better idea, in view of General Motors' preeminence in the motor of field, to the extent to which it is devoting resources to this problem. I simply throw that in for the record.

Mr. **Hillquist**: Thank you very much.

Dr. **Meyer**: Thank you very much.

One comment I would like to make. Everybody does get stumped up on these semantics, and "cost benefit," as normally used, is an analysis of the costs, both of the corrective measures and the things that are associated with the corrective—and the cost of the residual injury that remains after you have done the corrective measures. But you still haven't taken care of this as balanced against, shall we call it, the good, which is the improvement in health, an intangible, in an industrial environment such as a General Motors plant. The improvement in quality control resulting from the fact that less noise might allow people to concentrate better, resulting in less rejects which is something you can actually measure dollarewise, whereas cost effectiveness is, say, "I am going to spend X dollars for a certain activity which will produce a certain level of reduction in decibels." That is a little different.

You don't really try to measure the benefit; you are trying to say, "Well, what am I getting finitely?" and then trying to arrange a trade-off between something that gets to be rather intangible. It's a much harder approach than cost versus benefit. It's saying, "If I have a million dollars to spend, do I do better on improved enforcement measures or do I do better setting a lower standard?" This is a completely different approach. It's not trying to trade off spending dollars for some sort of a tangible good or intangible good.

I hope you are following this. You may not be.

Mr. **Hillquist**: I see your point, where you have the choice between one or the other.

Dr. **Meyer**: Or several, which one do you put your priorities into?

Mr. **Hillquist**: For instance, to require us to put $10.00 worth of sound control on a car is a rather nebulous thing.

Dr. **Meyer**: Right.

Mr. **Hillquist**: Whereas, if you were to say we need these sorts of noise levels, this sort of performance from your product—

Dr. **Meyer**: In effect, we are talking about trying to do both.

Mr. **Baron**: One brief—One brief comment, and I just wanted, for the record, to emphasize this distinction and difference between acceptability and what might be a desirable standard. On page 10, where the statement is made:

> "The validation tests suggested previously should help establish noise levels for individual vehicles which are acceptable to the public. These publicly acceptable levels may be significantly higher than the extremely low levels being proposed in some circles."

And I merely, for the record, wish to emphasize that we have a lot of homework to do in this semantic ploy of acceptability.

Dr. **MEYER**: Fine. Well, I certainly appreciate your cooperation in providing this information, and we will want to continue our work with you and other people towards our mutual goal.

Thank you very much.

Mr. **HILLQUIST**: Thank you.

Dr. **MEYER**: I would now like to ask Mr. S. A. Lippmann, who represents the Rubber Manufacturers' Association, if he would come forward. Mr. Lippmann, we are very happy to have you with us here today.

STATEMENT OF S. A. LIPPMAN, RUBBER MANUFACTURERS ASSOCIATION

Mr. S. A. **LIPPMAN**: Thank you, Mr. Chairman.

The enclosed material describes two categories of standard procedures for measuring truck tire sound levels. One kind of procedure produces information for communication, design, and certification; the other produces evaluations for road-side enforcement officers.

The paper describes the present state of technology relating to these procedures, and judges that a measuring and certifying standard is feasible at present, but that the technology does not exist for a roadside enforcement standard.

The general character of the measuring and certification standard is outlined, and some limitations are described.

I. *Types of Measurement Methods and Standards*

Currently consideration has been given to two distinct kinds of method measuring the sound radiated from truck tires. These considerations reflect differences in objective.

There is a need for a method leading to repeatable and pertinent evaluations which provides a basis for interchanging data between the automotive and the tire industries. This same method is to serve as the tool for developing quieter tires in the internal activities of the rubber industry, and also is to be the foundation for the manufacturer's certification that tires will not radiate more than a specified measure of sound.

The search for the second method of measurement originates in the interest in procedures enabling enforcement officers to determine whether some measure of sound is within limits set by law. Here the emphasis is on stable, portable, simply-operated equipment, evaluating the acceptance or rejection of sound in the normal roadside environment.

The opportunities and limitations for both kinds of testing standards follow from a number of fundamental characteristics of the tire as a source of sound. These matters are more naturally described in terms of procedures intended for the interchange of data. Their significance to procedures for enforcement follow from the obvious differences between a controlled and uncontrolled environment.

II. *Engineering Documentation*

The following sections lead to the positions presented by calling upon relationships between radiated sound and both environment and regulated testing factors. It is the intention of the RMA to offer the documentation from its available data and from other sources. These will be offered to the hearings scheduled to be held in Washington later in the year.

The inclusion of such information at this time would burden the presentation with detail not needed for stated objectives of the hearing.

III. *Factors Affecting the Measurement of Radiated Sound*

1. *Distance between the path of the vehicle and the point of measurement*

   The intensity of the peak sound level A-weighted, varies between 4 and 6 dB per doubling of the distance between the path of the centerline of the truck and the point of measurement. Fifty feet has been found to be a satisfactory distance for comparative evaluations for both mechanical and tire sounds.

2. *Speed of Travel*

   The peak radiated sound energy (at 50 feet) is affected by the details of the coincidences of the excitation frequencies of the tread elements and the tire resonances. However, in general, the peak radiated energy varies between the third and the fifth power of the speed.

   Over the important speed range from 40 mph to 60 mph most tires exhibit a change in peak radiation level of about 7 dB. The extremes observed are from 6 to 9 dB. An evaluation of peak level at 50 mph general predicts the levels at 40 and 60 mph to ± 1 DB. 50 mph is presently favored as a measuring speed by most people involved in establishing testing standards.

3. *Load Supported by Tire and Inflation Pressure*

   A. Sparse data show that if the axle height is maintained constant by simultaneous adjustment of load and inflation, the peak sound level does not change between 100 percent of rated load and 75 percent of this value. However, as the loads become progressively smaller than the 75 percent value, there is a continued reduction in peak sound level.

   B. When the inflation pressure is held constant, the radiated noise level increases with progressive increases in load.

4. *Ambient Temperature*

   The largest effect of ambient temperature thus far reported has been about 1.2 dB in tests at 50 mph and 50 feet from the path of the vehicle's centerline. This was for a change in road surface temperature from 82° to 111° F. The general observation has been that changes in ambient temperature are not significant.

5. *Texture and Material of Road Surfaces*

   The surface has a significant influence. As much as 5 dB differences in peak level are reported for tests of tires on different surfaces. The change in level with change in surface is not the same for all tire designs. Some tires display no detectable change in sound level with changes in surface, while others produce dramatic effects.

   The smoother surfaces generally cause more sound to radiate. No definition exists as yet of a surface that represents the sound-generating properties of the average highway, or even of the worst actual highway.

6. *Conditions of Wear*

   Wear is known to affect the peak sound level radiated from truck tires. However, since the details of wear are significant (i.e., the surface contour of the worn tread elements as well as the average residual anti-skid), there is a problem of how to define a worn tire for testing standards. Average residual anti-skid does not appear to be sufficient, and there is no data in depth at this time leading to a statistical definition of an appropriately "worn tire."

7. *Spectral Characteristics of Peak Tire Sounds*

   Tires of differing designs have a variety of sound spectra. The important part of the spectrum generally extends from 200 hz to 2000 hz, and strong peaks occur between 250 hz and 600 hz. Detailed spectral analyses show that there is at least one fundamental frequency due to speed of travel and the spacing of tread elements. Harmonics of this frequency are also present. Resonances of the tire interact with the excitation frequencies of the tread element spacings to broaden the span of frequencies present.

   Very smooth surfaces with a wet coefficient of friction of 0.2 or less tend to emphasize frequencies above 600 hz.

   Spectral characteristics possibly could offer a means for separating tire sounds from vehicle sounds for roadside enforcement procedures. However, mechanical noises from vehicles and wind can fall in the 200 hz to 2000 hz band and no means are known that are portable, accurate, instantaneous, and simple to operate that would be capable of making detailed spectral distinctions if they were identified.

8. *Environmental Interferences*
   a. The geometry of the terrain, such as ridges, ditches, hills and depressions can affect the radiation of sounds from the tire to the point of measurement. Walls, trees, curbs, and buildings have similar effects.
   b. Ambient wind velocities also alter the transmission of sound; 12 mph appears to be an acceptable upper limit for wind velocity.
   c. Absorptive materials in the sound field can influence the measurement. Grass, snow, shrubbery are such influences.
   d. The condition of the road surface is important. The sound level responds to the presence of contaminants, such as moisture, sand and snow.
   e. Background noises, as from traffic, manufacturing plants and the vehicle bearing the tires have obvious effects on the measurement. Such noises should be at least 10 dB under the level of tire sounds at the point of detection.

IV. *Measuring Procedures for Interchange of Reliable Data*

1. *Degree of Control*

   The factors affecting the generation and radiation of tire noise can be brought under control in special test sites. The contour of the test site can be graded flat, foliage removed, and the road surface prepared according to some predetermined specification. Testing can be withheld when the ambient wind velocity, the background noise, and rain interfere. Vehicles bearing the tires can be chosen and prepared for minimum acoustical interferences (rather than for the economics of trucking). These vehicles can be operated in the vicinity of the test location in a manner such as to further reduce acoustical interference. For example, they can coast by the detecting microphone with their engines turned off. The vehicles can be certified for minimum acoustical interference by testing on special tires developed for low sound operation, but unsuitable for the tractive and wear resistance requirements of commercial usage.

Repeated testing on special test sites offers the opportunity to reduce measurement errors through averaging and, as well, provides a measure of the consistency of the test data. Speeds can be accurately controlled to a standard value, and similarly, the tires can be loaded and inflated accurately to standard values. The relationship of the microphone's location to the path of the vehicle can be suitably arranged and maintained. The complexity and bulk of the instrumentation, as well as mathematical procedures for data analysis, offer no significant obstacle to the acquisition of measurements. Tape recordings, and subsequent disassociation of the sound energy by bands is entirely feasible. Mathematical weighting procedures for spectra or pass bands are also possible.

2. *Elements of the Testing Standard Recognized at the Present Time*
   a. The site is to be flat and free of sound-absorbing and reflecting objects.
   b. The vehicle is to pass in front of a measuring microphone on a straight road. The measuring portion of the road is approximately 200 feet long, centered about the microphone.
   c. The microphone is located 50 feet from the path of the centerline of the vehicle and is 4 feet from the ground plane. The microphone is directed towards the center of the test path and oriented according to the manufacturer's specification.
   d. The test vehicle is a flat-bed, two-axle truck. The rear axle bears four test tires. The under side of the bed is four feet from the ground plane. Under test conditions, the truck and its front tires should produce a peak sound level in the 200 hz to 2000 hz band at least 10 dB less than when evaluating test tires.
   e. The vehicle is to pass by the microphone at 50 mph during standard measurements of tire noise.
   f. The tires are to be loaded according to the published maximum specification of the Tire and Rim Association, or are to be within 75 percent of that load with the inflation pressure adjusted so that the axle height is the same as at the maximum load and inflation.

g. The evaluation is to be the peak sound level in dB on the A weighted scale, taken at the standard slow sound level meter response. The band of frequencies involved extends from 200 hz to 2000 hz.

h. Tests are to be repeated at least three times, and more times, if necessary, to meet the requirement that—
   the number of tests equal or exceed the deviation among the evaluations in dB.

i. Precautions and instrumentation are to be similar to those which appear in SAE Standards for vehicle noise evaluations.

3. *Elements of the Testing Standard Not Understood at Present*

   a. The definition of a road surface that represents a reasonable measure of the tire sounds generated on the nation's highways has not been established.

   b. The wear patterns tires receive depend on the peculiarities of usage, and these patterns affect the sounds generated by the tires. As a result, it has not been clear from available data how to define and certify the sound level of worn tires.

   c. Acceptance levels for tire sounds have implications in other performance characteristics of tires (Such as tread wear and traction). The setting of acceptance levels for sound involves the economics of trucking as well as operational procedures. This matter has not yet been unraveled for judgments on trade-offs.

4. *Actions Towards the Establishment of a Testing Standard*

The rubber industry acknowledges the joint interest of automotive engineers and governmental agencies, trucking experts, recappers, and tire designers in evaluating the sounds from truck tires. Consequently, it has felt that the standard is best set by an organization that represents the collective expertise of these diverse groups. This standard-setting function is currently going on in the Society of Automotive Engineers. The rubber industry has supported this activity by supplying relevant information when requested, and will continue to do so in the future.

It is our anticipation that the SAE Subcommittee on Truck Tire Noise will complete a procedural testing standard by this fall, for uses other than for roadside enforcement. However, issuance of the standard will occur sometime later because of the customary procedures of the SAE.

An Ad Hoc Committee of the Rubber Manufacturers' Association, Automobile Manufacturers' Association (Motor Truck Manufacturers' Division) has formed to assemble whatever data might exist for supporting the ONAC in its work on testing standards.

The Department of Transportation and National Bureau of Standards, and also the MTS, have been acquiring test data towards the objective of establishing test standards. We understand that Serendipity, Inc., have been studying the general problem for DOT.

V. *Roadside Enforcement Standards for Truck Tire Sound Levels.*

Enforcement measuring standards could in some major respects be less complex than measuring standards for the interchange of data. Almost all of the specialized considerations noted above could be waived in favor of evaluating detected peak sound measures against an acceptance standard. Enforcement need not be concerned with speed, load, inflation pressure, road surface, tread wear but, rather, only with the levels radiated from the tires at the time of enforcement.

There is, however, at least one major difficulty in establishing an enforcement standard for truck tire sound levels. That is the item discussed in III 7, the problem of separating tire sounds from other truck sounds. At present we know of no reliable procedure for such separations. Whether such separations will be possible with portable instrumentation and on the time scale required for enforcement is another consideration that we commend to the attention of the ONAC. It may not be necessary to isolate tire noise from other vehicle noises for purposes of enforcement.

VI. *Enforcement of Sound Levels for Truck Tires*

In view of the state of the art described earlier, it appears that presently a standard can be established and enforced for a manufacturer's certification of the sound levels of new truck tires. There probably would have to be some subsequent standardized procedure for establishing a "worn tire" for similar certifications. It is anticipated that a standard worn tire would be sufficiently representative of the tire population in use to have value in guiding Governmental agencies seeking to control traffic noise.

A representative standard test surface is also required for a testing standard. Presently available surfaces could be rated for average relative sensitivities, but ultimately the standard surface should be provided by the Government or precisely defined. Because of the need for widespread testing this action appears to be more properly the function of a national governmental agency then either of a professional society or of a particular industry.

The roadside enforcement standards for truck tire sound levels appear to be held up by the inability of present technology to reliably separate tire sounds from other vehicle sounds. Further considerations should be given to whether or not there is a need for such separations for enforcement purposes. Should the tires be treated simply as a component of the vehicle adding to its overall characteristics?

If this need for separation is warranted, then work on the basis for such separations and suitable instrumentation should be undertaken.

Dr. MEYER: Thank you very much, sir. I see a relationship between that last statement and your introductory comments regarding a need for a method leading to repeatable and pertinent evaluations as a basis for interchange of data between the automotive and the tire industries; it seems to me we are going to have to do a systems approach here.

Mr. LIPPMANN: Right.

Dr. MEYER: Mr. Lippmann, it seems also to me that you have raised some points which serve as a basis for our establishing some requirements or for some action in EPA along with the

Department of Transportation and the National Bureau of Standards. This question of sound level measurements of truck tires and standard surfaces, and so on, is a difficult one. I was made aware of this particularly after listening to the gentleman from Hawaii the other day—I don't know whether you were here when he talked about the—

Mr. LIPPMANN: No.

Dr. MEYER:—fact that the coral in their surfaces there not only wears out the tires faster, but also causes more noise. As a step in that direction, I did note in your written statement that you have an Ad Hoc Committee formed to help assemble data to help us. And I would like to get together with that committee at the very earliest date so through it, and through you and your work with the SAE, we may try to get together as much of this information as we need to develop an action program. I presume I should address this communication to you as the Chairman of this Committee on Truck Tire Noise, or to whom should I address some communications on this?

Mr. LIPPMANN: Well, I think more properly at this type meeting here today, I am representing the Rubber Manufacturers' Association.

Dr. MEYER: So I address it to the Ad Hoc Committee of the Rubber Manufacturers' Association?

Mr. LIPPMANN: I think that would be a good starting point, yes.

Dr. MEYER: But I could communicate with them through you, I presume?

Mr. LIPPMANN: I would be perfectly happy to assist in any way I could.

Dr. MEYER: You mentioned you had some additional material that you were going to give us. Do you have some idea when that might be ready? I have a reason for asking. I am not trying to pressure you on the time scale.

Mr. LIPPMANN: We have been hoping to have this material available for your Washington meeting.

Dr. MEYER: I was going to say to send that to me and that would be a most desirable time to continue this dialogue. These hearings are really a continuation one after another, so I would be happy to have it there, if we can, sir.

Mr. LIPPMANN: Very well.

Dr. MEYER: Panel, do you have any specific questions? In view of the time—but if it's pertinent—but otherwise, give it to me in writing to pass on.

Dr. PLAGER: May I ask one quick question?

Dr. MEYER: Yes.

Dr. PLAGER: If I understand your statement, Mr. Lippmann, I am very much encouraged by what you said, even though I recognize all the problems that you have pointed out, because it seems to me what you have said is that there really is no—if I understand you correctly—that there is no obstacle right now to establishing Manufacturer's certification of new tires with regard to noise under some sort of standardized test procedures. That may or may not be the way, in fact, they are used in

Hawaii. They may have a special problem because of the road surface, but would you give me your reaction to this?

Let's say we took all the tires, or a sample of the tires now generally being used by trucks, by heavy trucks—or some—maybe the ones being made by Goodrich or something, and we ran them through a standard procedure and we discovered they all made X decibels noise, or the average was determined, and you could—then your industry could then produce a tire that made X minus 10 or 8 decibels. Would it not be reasonable to assume that we have thereby reduced the noise, even on non-standard surfaces or in a variety of contexts, or even with worn tires?

Mr. **LIPPMANN**: I think that what you are saying is essentially correct. There may be inversions, obviously. I think essentially that's correct, but that would only be for new tires.

Dr. **PLAGER**: How about recaps? How big a problem is recaps in the industry, or how big a factor?

Mr. **LIPPMANN**: Recaps are a very big factor because the standard practice for using truck tires is to recap them sometimes as many as five times.

Dr. **PLAGER**: So we would really have to treat recaps like new tires?

Mr. **LIPPMANN**: Recaps would have to be qualified as well.

Dr. **PLAGER**: Thank you.

Dr. **MEYER**: Thank you very much, sir. I am looking forward to further communications with you.

Mr. **BARON**: Your associates in the industry put the blame on tire noise. They say this is what restricts the speed at which you can measure; this is what restricts X, Y and Z. Do you accept that?

Mr. **LIPPMANN**: I would say tire noise is a major factor. I would not agree that it is the only major factor, by any means. I would say it shares the spotlight with other major factors and, depending—I should elaborate—and depending on the type of tire, the traction type of tire. The ones with cross lugs are the most difficult to control for noise, and possibly never will be controlled to levels that people look for at the present time.

However, their elimination involves problems in economics of trucking and the capability of trucking—and I think that's beyond the scope of what I am prepared to offer.

Mr. **BARON**: Thank you.

Dr. **MEYER**: Very good. Thank you very much, sir.

I should now like to ask Mr. Arthur Meling of the Air-Conditioning and Refrigeration Institute if he would come forward.

Mr. Meling has appeared with his colleagues in the past and I am happy to hear from him again.

STATEMENT OF ARTHUR E. MELING, AIR CONDITIONING AND REFRIGERATION INSTITUTE

Mr. **ARTHUR E. MELING**: Thank you, Dr. Meyer. I appreciate it.

We are going to, in anticipation of the fact that you may have some questions,—we are going to skip over both the background material and any description of the stuff that's in the packet. Now, you have had that before, and it's put in there for the benefit of the panel members. There's only one thing new, as far as you are concerned, and that's the Better Business Book. Now, this is the fourth or fifth time that we have published that jointly with them, and this is the first time that there's any mention of the sound. It's in the back of the packet. It just came out, and that gets distribution through utilities and whatnot up in the hundreds of thousands of copies to the public.

Dr. MEYER: I hate to, as I said, have to emphasize our briefness this evening, but the staff and myself have got to catch an airplane which, if we miss, means that I won't be presiding at a meeting like this at Denver tomorrow morning at nine o'clock.

Mr. MELING: Well, we won't take very long, unless there are a great many questions.

Dr. MEYER: We appreciate all your help, sir. I want the record to show, sir, that we are aware of your interest and desire to be cooperative.

Mr. MELING: Thank you.

My associates here today are Mr. Scott Bayless, Manager of the Engineering Laboratories for the York Division of Borg-Warner Corporation, and a member of the ARI Task Committee that developed these standards; and John R. Shriner, Manager of Advanced Development on Unitary Equipment at Carrier Air-Conditioning Company. Both of these men were members of the Task Committee years ago that developed these standards, and Jack will participate in the questions, but will not make any presentation.

Dr. MEYER: Fine.

Mr. MELING: It is a privilege for us to meet with you and discuss the certification program and standards developed by the Air-Conditioning and Refrigeration Institute for predicting and controlling the sound level of outdoor unitary air-conditioning equipment, as related to legislation and enforcement problems.

1. Regulations must be readily enforceable by inspectors or police and non-discriminatory to stand up in court.

2. Regulations must be realistic or voters will not accept them. Somewhere in the neighborhood of 60 million people live in air-conditioned housing now—about 30 percent of the population.

It should be noted that early ordinances mentioning air-conditioning specifically were of two types. Apparently there are not very many in existence today, of either type. Of the two, the one most generally used referred only to the location of outdoor equipment on the property with reference to property lines. The other type is the one that mentions decibel levels. The most recently adopted of those are realistic. However, a few that have been enacted during the past several years call for values that are below the normal background level and difficult, if not impossible, to enforce.

And now, if we may lower the lights, I should like to present a few slides with excerpts from several of these ordinances to illustrate the variety, together with a number of others relating to some of the subjects of this presentation.

First slide, please.

Here we see an example of the placement type such as used in Mount Lebanon (Pittsburgh), Pennsylvania. It states that in residence districts "any outdoor air-conditioning installation shall be located in either the rear yard or side yard of the lot and shall not be located closer than 15 feet to any property line." There is no mention of decibels. This was the first type of residential air-conditioning ordinance and was enacted about 1958-60.

Next slide, please.

This is a decibel type of ordinance. These are classified into two groups; namely, the realistic ordinances and those that are unrealistic. This first one from West Orange, New Jersey, merely states that "the audible noise shall mean a noise intensity of over 45 decibels measured in the center of the room—it is similar to the FHA requirement.

Next slide, please.

This also a practical decibel ordinance, is from Etobicoke, a suburb of Toronto, Ontario, Canada. As you can see, it provides that "all central air-conditioning units shall be operated at a sufficiently low noise level so that sound emanating therefrom shall not exceed 60 decibels on the A-scale, measured at a point on or beyond the property line," providing that "no central air-conditioning unit shall be constructed closer than 15 feet to any side or rear lot line." Anaheim, California, has one somewhat similar.

Next slide, please.

Earliest residential installations, as illustrated here, were water-cooled, using city water, which was frequently wasted or used to water the lawn after cooling the condenser. These installations were quite satisfactory. However, the problem of a general shortage of water resulted in outlawing of all waste-water installations.

Next slide, please.

This, of course, is the conventional application generally used today, with a furnace and an air-conditioning evaporator coil inside the house and an air-cooled condensing unit outdoors. Contrary to general opinion, the many reasons for going to this type of application are not essentially based on cost.

Next slide, please.

Here are six of the principal reasons for this design.

1. Cooling may be added to a furnance after installation.

2. The ratio of heating to cooling capacity can most easily be varied to meet geographic requirements. Lots of cooling capacity in the south with small heating requirement; medium heating, medium cooling in the central part of the country, and large heating and small cooling capacity in the north.

3. Flexibility of installation. The inside unit can be up-flow, down-flow, or horizontal.

4. Least inside space required; units can be put in a closet, attic, or crawl space.

5 It can take advantage of high production runs on standard furnaces, coils and condensing units.

6. And one of the most important reasons. It eliminates the need for isolating the normal vibration in the hot gas line from the structure when the line is run in the house.

May I have the next slide.

The purpose for putting this formula on the screen is to establish the fact that as condensing units go up in size, obviously the quantity of air that must be handled goes up. Furthermore, this air quantity is generally in the neighborhood of 700 cfm per ton. So on a three-ton job, we have a little over 2,000 cfm and on a five-ton job about 3,500.

This is arrived at by use of the following abbreviated formula:

$$\frac{250 \text{ btu} \times 56}{20^\circ} = 700 \text{ cfm}$$

While a ton of refrigeration amounts to 200 btu per minute on the cooling side, it is generally taken as 250 btu on the condenser side to include the heat of the motor. The factor of 56 is derived from the weight and specific heat of a cubic foot of standard air. A typical condensing temperature of 125° with 95° entering air and a 10° spread, establishes a 20° rise. Obviously, this kind of air quantity cannot be moved through a condenser without an audible operating sound.

Lights, please.

Today there are classes of ordinances.

(1) A design type which might be described as knowing what you have to do "before the fact" which can take advantage of the ARI rating in a design to meet the requirements.

(2) A guessing type which may be described as only applicable after the fact—such as so many decibels over the background. Obviously it is impossible to design a system against such a regulation because the background varies from day to day and hour to hour.

Urban residential areas are the problems; where houses and apartments are close together—even there, backgrounds vary.

So ARI went to indoor levels as the starting base for acceptability, since it is independent of the outdoors.

And with that, Scott will discuss with you some slides and how it was developed from there.

Mr. W. Scott Bayless: To ARI, it seemed logical to recognize a representative noise-sensitive living area in the home as the yardstick against which to measure the effect of intrusive outdoor-unit sound. A typical furnished bedroom was selected, with an open window located 15 feet from and facing the property line. An NC-35 noise criteria in the room was chosen as being representative for the environment. It was originally proposed that sound pressure levels 5 dB in excess of the NC-35 contour (the NC 40 contour) as measured at the point of complaint in the bedroom, on a sound level meter with octave band analyzer be the limit before any remedial action be required. This 5 dB was an allowance for individual sensitivity to sound, and measurement variations due to time-varying and location-dependent signals in the bedroom sound field. On the surface, this technique seemed an ideal solution to valid establishment of a nuisance condition due to intrusive sounds at the point of complaint.

However, it soon became evident that a more practical, less ideal, technique was needed as:

1. the measurement of sound pressure levels in octave bands, oftentime varying, was difficult for the average enforcement

official, particularly late at night in a private residence.

2. officials could make subjective judgment comparisons of the measured sound pressure levels with published criteria, which were often emotionally motivated by their own feelings and resulted in over or under reaction to possible solutions to the problem.
3. Legal questions were raised by the precedent-setting idea for sound measurements made inside a private residence to be used for legal action against another party, a neighbor.

To improve the enforcement method, the technical requirements of an ordinance were further developed, including the following salient features.

1. Measurements were to be made at the property line, an existing legally recognized point of evaluation, rather than inside a residence.
2. A 40 dB(A) criterion was selected as acceptable as upper limits from ASHRAE & Harris for the room sound level. This is approximately equivalent to the original NC-35 criterion, and now permitted a single sound level measurement in dB(A) using the calibrated sound level meter reading directly. This simplified the enforcement official's job considerably as only one number had to be measured and compared to criterion.
3. Through known acoustical techniques, an equivalent sound level of 56 dB(A) was determined at the property line for one of 40 dB(A) or NC-35, in a typical bedroom with open window, 15 feet away.

This equivalent level was developed from the formula

$$LW_1 - 10\log\frac{4\pi r^2}{Q} + 10\log S - (LW_2 - LP_2) = LP_3\ (\text{dB})$$

Where — Lw_1 = Sound Power Level of the source in dB re' 10^{-12} watts

Lw_2 = Sound Power Level of the room via the window in dB re' 10^{-12} watts

Lp_2 = Sound Pressure level in the room in dB re' 2X 10^{-4} microbar

S = Area of Open Window, square feet

r = Distance, source to open window, feet

Q = Sound radiation directivity factor.

For our use we assign:
$Q = 2$, $r = 30$ ft., $S = 2$ sq. ft., $Lw_2 - Lp_2 = 3$ dB, $Lp_2 = 40$ dBA
Substituting:

$$Lw_1 - 10\log\frac{4\pi(30)^2}{2} + 10\log 2 - 3 = 40\ (\text{dB})$$

$$Lw_1 - 10\log\frac{4\pi(15)^2}{2} + 10.5 = LP_3$$

Using the same formula (less the terms $(Lw_2 - Lp_2)$ applied to the room) and solving for the sound pressure level at the property line, 15 feet away, this becomes 56 dB(A) maximum without exceeding our design goal in the room of 40 dB(A). In an actual situation, a tolerance above the design goal should be allowed before a condition exists which could be called a legal nuisance. As many people have difficulty in discriminating between similar sounds differing by less than 3 DB, ARI has recommended a 4 dB tolerance above the design goal before a basis for legal action is considered.

The ARI Sound Certification Program, as presented at the Dallas Hearing has been designed compatible with ARI's contractor's/installer's application guide to facilitate the use of proper installation procedures for our units. Adherence to these recommendations permits the installer to determine the anticipated sound levels due to air-cooled unit operation prior to installation. He can try any of several unit locations dependent upon the particular location of houses, porches, pools, etc., and determine the most practical solution from audible-sound standpoint. This should preserve the neighborhood as much as feasible, while permitting those who desire to benefit from air-conditioning to have it.

The ARI Sound Certification Program lists almost 700 units in the latest edition of its directory, produced by 15 manufacturers. Participation in the program is voluntary, with all costs borne by the industry. The sound ratings include penalties for typical subjective responses to unwanted sounds such as whistles, whines, screeches, rattles, and so forth. Equipment producing such sounds will be compelled to accept a higher number, if they persist, than if the manufacturer succeeded in removing them. This is the kind of noise which is disturbing and which you don't pick up with any meter. As brought out in the testimony on Senate Bill 1016, this method of rating goes beyond just comparing machines to machines, and compares machines to people and the reactions of people to types of noises, which was established by the questioning, to be a health factor.

To illustrate use of the ARI Sound Rating and Application Guide, consider a unit of SRN = 19 located on ground near the air-conditioned residence, a unit-to-property-line distance of 30 feet with no intervening sound barrier. Then, at the property line:

Unit SRN	19
Equipment Location Factor	+1
Barrier Shielding Factor	—0
South Path Factor	—0
Sound Level Number (SLN)	20

Using the Nomogram for predicting dB(A) Level, a 57 dB(A) is anticipated at the property line.

In summary, a practical technique of voluntary sound-rating outdoor unitary equipment by the manufacturer has been developed which, when used with a companion equipment application guide, will help preserve our outdoor environment and at the same time permit our average citizen to enjoy the benefits of home air-conditioning.

Art, do you want to continue on?

Mr. MELING: From Mr. Bayless' discussion, you can see why for an ordinance in a residential area we suggest a single number rating and application approach such as ARI offers, or its equivalent. ARI does not seek nor desire a mandatory requirement but, rather, recognition that the ARI method is acceptable.

Please dim the lights and may I have the next slide.

Here we see a summary for monitoring purposes of a new noise ordinance in the City of Chicago, adopted in May of 1971. The ordinance itself is on an octave band basis but the A-scale levels are given for monitoring purposes. Please note these dB(A) values—55, 58 and 61—are on a residential property line located either in an area zoned residential, general manufacturing, or heavy manufacturing.

Next slide.

Here we have another recent ordinance also enacted in May of 1971 for the State of Colorado. These are nighttime values 25 feet inside a neighbor's property. I have established an equivalent value at the property line considering that the equipment would be 25 feet the other way and on the user's property for a total difference in distance of 50 feet. The daytime values are 5 decibels higher.

Next slide, please.

Let's discuss the ARI rating system and its form of labeling as illustrated by this typical page from the Directory. In the August 1971 Directory there are 679 units listed all side by side and directly compared. 239 of them have an ARI number 20; about 180 each have number 21 and number 19; 47 number 18 and just a very few at 17 and 22 and 23. The Directory is published three times a year and distributed free to a very large mailing list and available to anyone who requests a copy.

Next slide, please.

Let's compare what these ARI rating numbers require in the way of distance to the property line in order to achieve the 56 dB(A) at the property line that Mr. Bayless discussed. In each instance it is assumed that there is one reflecting surface so the rating number has one added to it and therefore we are rating the units at 18, 19, 20 and 21 to provide SLN numbers of 19, 20, 21 and 22, for use on the nomogram.

You will note that the unit with an SRN of 18 requires 20 feet and the one with an SRN of 21 requires 65 feet to realize 56 dB(A) at the property line.

Next slide.

You might ask how the values can be reduced if we do not have enough distance on the property. In this slide we are illustrating the use of a masonry barrier wall. In the example, the unit has an SRN of 21 and the distance to the property line, 5 feet above ground, is 28 feet. By use of the barrier with this distance, we obtain 56 dB(A). The disadvantage is, of course, the cost of the masonary wall, which must be at least twice as long as it is high and, depending on how it is finished, may cost several hundred dollars or more as a direct addition to normal cost of an air-conditioning system.

Next slide.

In this slide we show how the distance is reduced for the units rated 18, 19, 20 and 21 in the earlier slide, and you will note now the unit having an SRN of 18 can be installed as close as 9 feet and the one having an SRN of 21 still would require 30 feet.

Next slide.

This slide is shown to illustrate that every time the distance from the unit to the property line is doubled, the dB(A) at the property line is reduced by 6, so in the first instance with the unit at 10 feet providing 65 dB(A), we find the value is 59 when the distance is increased to 20 and as low as 53 when it is reduced to 40 feet.

Next slide.

This slide is shown to illustrate, perhaps much to your surprise, that the best location from a noise standpoint is to put the unit in the front of the house, directly in the center. This has the advantage of adding the width of the street in establishing the noise level at the house across the street, and of course the barrier of the house itself for the house behind it, and it is equidistant from both side property lines, the same as if it were located in the rear.

Lights, please.

This brings out the fact that the contractor must be educated to properly design an installation to meet a prescribed regulation, or to provide (where there are no regulations) an acceptable installation such as a dB(A) at the property line, outside window or the center of a patio. Many such educational programs are under say now; using ARI material.

In non-urban areas, where houses are further apart, units can be installed at a greater minimum distance from the property line.

Conclusion:

Since it is now possible to predict and control sound with the ARI Certification Program, if realistic values are called for at the property line, etc., contractors should be able to provide, and the community have, both an acceptable outdoor environment and the health and indoor environmental benefits of air-conditioning without necessarily adding to costs.

We feel that the background information offered here today may help to provide a practical solution to legislative bodies confronted with the problems of considering reasonable legislation in the area of sound, as affecting the overall interests of the community. We feel also that the desires of the community in this respect must also be taken into account, toward the end that such regulations will meet the approval of a majority of the constituents of any jurisdiction proposing such legislation.

If you have any questions, we would be glad to answer them.

Dr. MEYER: Well, thank you very much, sir. I appreciated getting your information in the past, and I want to have my staff work with you more closely when the time comes for working on these model laws and codes.

Mr. MELING: We would like very much to do that.

Dr. MEYER: We are interested in technique here not so much because of the noise levels suggested, but because the technique describes how to approach a scheme of defining back to the source from a desired noise level.

Any questions? Dr. Dietrich, do you have a question?

Dr. **Dietrich**: No, I do not.

Dr. **Meyer**: Mr. Baron?

Mr. **Baron**: 56 dB(A) ±4 decibels is 60 decibels, and am I to understand that you would like an ordinance in the community for operating equipment at 60-decibel levels during the night?

Mr. **Meling**: Well, Chicago has adopted 55, 58 and 61, depending on the zoning. And the State of Colorado has adopted the equivalent of the 56 at the property line. Those are levels you can live with, if you are operating, since the problem is in an urban community where the places are close together. Now, where you are out on a half-acre lot—and you could back the unit off to 50, 75, 100 feet into it, but the—

Mr. **Baron**: How close is it on 50, 65 dB(A) to the decibel at—or—dB(A) equivalent at an M-1 zoning area, manufacturing, as compared to a residential area? Isn't it approximately 50, 65 decibels?

Mr. **Meling**: Well—

Mr. **Baron**: And you are suggesting—

Mr. **Meling**: No, we are not suggesting anything.

Mr. **Baron**: Well, you have a 56 ± 4.

Mr. **Meling**: He took some examples. We started in the room with 40 as the upper limit of acceptability, and that comes out of the Harris Handbook. Noise control and the arbitrary guide and the FHA has 45, and New York City has 45, and now we use 40.

Dr. **Meyer**: Alex, he is not describing or recommending a level; he's describing a method that, if a county or a city establishes a level at a property line, you take this technique and the information from the manufacturer and determine where you can locate the device, or if you can locate it, or whether or not you have to enclose it. He's not recommending a level; he's just describing a technique that can be used. You select a standard that has been established by the community, and then you see whether you can install the equipment based on the application of these techniques.

Mr. **Meling**: And it's a guide for the community. If they have people that want air-conditioning, it gives them a guide as to whether or not the values they might be talking about are achievable.

Mr. **Baron**: I think that the concept of citing a given—a contractor technique for installation is an excellent one, very much needed. I just raised the question of the level that is created by this type of equipment, because it does seem to be causing problems.

Mr. **Meling**: Well, I think that's right, and if you get into it—Now, we have been at this a long time, and usually lots of times, if I get a serious complaint, it has to do with bad feelings between neighbors, and this happens to be the thing that it gets taken out on. This is—There's a lot of other things. Let me just enumerate a couple of things here for a minute that I wrote down while sitting here this afternoon.

In addition to this technique, you have got 15 laboratories, you have got 15 companies that are in the Directory and in this issue of it, because the next one comes out the first of January and they will all be in there. And I know for a fact that in one instance, at any rate, where they had to build a whole building, you are talking about an investment of a million bucks per company. And if you have got to do some enclosures, it's at least a quarter of a million. You got to swing these buildings on springs because they are always in an industrial area. And you run a freight train in there and you can't take any reading. So it's a big investment.

Now, we have got the companies to put the laboratories in. In fact, I think you folks and BBA have consultants on practically all of them. They are in there.

We also set up an independent laboratory, but when we started this thing in 1967, or brought the Directory out, there wasn't then an independent lab that you could put somebody in to do this. So all of these things had to be created. And then, in addition, we developed this built-in capability by whines, screeches and other expressions which we would not normally pick up. But that's the kind of stuff that gives units a pure tone, and we penalize for them, and that's the incentive to get it out, because you get a higher number. You may have a number 20, whereas you could have a number 18, if you had engineered that out. So you have a built-in incentive to do that.

You also have got the competitive pressure on the manufacturers. They are all on the same page, you might say. They are all on a half dozen pages. You can look right down the line at one right after the other, and don't think they aren't looking at them.

We are in the process of educating the contractor, in the process of educating the public, and trying to also be helpful and educational to the Legislatures, and it's working.

I had to buy a new unit in August. The unit that I had burned out on my house, which had been put in nine years before, and I'll tell you there's a difference of night and day in the sound.

But you got this kind of irritating noise in it that has been taken out, so a lot has been accomplished, and we are—we couldn't—

I always tell people the best evidence you got that we are on the up-and-up is that we publish jointly a book with the Better Business Bureau, and I don't think you could do that. And this is the fourth edition and we got the sound in there now, what to look for when you put in a job like that. We are very serious on this thing.

Why did we get into noise? As some of the people testified, the reason they buy the air-conditioning is to shut out the noise. So we have been conscious and aware of noise from the beginning. So we have been conscious of trying to improve them from the start. The only reason we have got them outside air-cooled today is because you haven't got the area.

Dr. MEYER: Thank you very much, Mr. Meling, and I am sure the other panelists may have some questions that they may like to submit to you in writing. Unfortunately, I must terminate this because, as I said, if I don't do so, why, I can't continue the next session of this over in Denver.

Mr. **MELING**: I appreciate your letting us come here, believe me.

Dr. **MEYER**: You should be kind enough to respond to some questions in writing, I know.

Mr. Hildebrand and Dr. Plager, if you all have some questions—I don't want to be rude, but we have one other witness.

Dr. Hayes, if you would come forward, sir, I would be happy to hear from you.

And, gentlemen, we will want to keep in touch with you.

Mr. **MELING**: We would like to do that.

Dr. **KENNETHS HAYES**: Shall I begin?

Dr. **MEYER**: Yes, sir, will you go ahead.

STATEMENT OF KENNETH HAYES, SANTA CLARA, CALIF.

Dr. **HAYES**: Thank you very much for the opportunity of speaking. I will try and make it brief.

My name is Kenneth Hayes, and I am a physician in private practice in the city of San Jose, and I am the Acting Chairman of SOVAC, or Save Our Valley Action Committee. The Valley stands for Santa Clara Valley.

I am also a member of our County Medical Society's Environmental Health Committee, and the Medical Society Council has authorized me to speak where problems of health and general well being are concerned insofar as San Jose Airport expansion goes.

Save Our Valley Action Committee (SOVAC) originally was named the Safe and Sane Airport Committee. This single-purpose, community-based organization arose in response to a proposal by the City of San Jose that a new airport be built immediately north of the city, with an estimated eventual passenger potential of 42,000,000 persons per year. This proposal seemed inadvisable from many aspects, including the large amounts of noise pollution to many close residential areas, impairment of teaching and school facilities in the neighborhood, disruption or necessary relocation of the east wing of Agnew State Hospital, problems associated with traffic and air pollution overload in the community, proximity to an earthquake fault, instability and subsidence of the land, plus anticipated continued problems of drainage, etc. The City of San Jose has at present abandoned this plan for the alternative, while the Safe and Sane Airport Committee changed its named to SOVAC. It also expanded its interest not only to concern about the airport, with its attendant noise and air pollution potential, but to concern over balanced transportation for the community, including a vital interest in means of transport other than the vehicle, and support for bikeways, systems of mass and local non-auto transport, and usage of low pollution emission vehicles.

The City of San Jose now proposes to exand its present municipal airport in three five-year stage programs to an eventual capacity of around 15 to 16 million passengers per year, that capacity being equal to what San Francisco International Airport handles at present.

The present airport site was originally designed for general aviation use (small airplanes), but this usage is being phased out to accommodate increasing commercial aircraft usage. The airport is constructed on a general north-south axis, with the south border approximately 1½ to 2 miles from the center of downtown San Jose, and adjacent to a residential area and one grammar school which has been necessarily abandoned. The northern end of the airport is 1½ to 2 miles from the west facility of Agnew State Hospital (for the treatment of mentally ill) which, with its neighboring community of Agnew, lies almost directly under the air flight path. It does not appear feasible to build runways in an east-west running direction since there is residential housing in these areas.

The City of San Jose feels that the projected demands for South San Francisco Bay Airport needs dictate a large airport facility in San Jose, and these needs cannot and will not be met by Oakland and San Francisco Airports. Further, this airport expansion will encourage industries to locate close by, and that San Jose's economy will be obviously benefited by the increase of business revenues and industries which will be attracted to and will surround the new airport site.

It is SOVAC's contention that the City of San Jose has proceeded without interruption on its program of airport expansion, despite the fact that adequate environmental impact studies are lacking on this large airport expansion. It appears to us that the present airport location is inadvisably close to the city, and, in particular, residential and school locations; that these areas are already experiencing difficulties attendant to excessive noise levels, and that the anticipated airport expansion will bring intolerable levels of noise to larger areas of San Jose, as well as the creation of extensive local problems of air pollution. This latter problem has already received a warning from the Bay Area Air Pollution Control District in its studies submitted to BASAR (Bay Area Study of Airport Requirements). Since the automobile represents the only means of transportation to and from the airport site at present, this problem will be grossly magnified.

It does not appear feasible for SOVAC that noise levels in and around the airport can be brought to acceptable levels, even though these noise levels could be reduced significantly in the next decade or two. When the airport is fully operative, with several flights per hour, the anticipated noise levels, even if halved (reduced 10 decibels) will far exceed acceptable State standards, as well as other well-known air-noise standards used in other areas and countries. Environmentally acceptable alternatives to the present site must be considered at this time. These alternatives may appear from the BASAR study to be completed. They might include restriction of the present site to vertical and short landings and takeoff flights, relocating the airport site into Southern Santa Clara County, with a rapid transit spur to and fro, or location in a neighboring county with jumper flights into Central Santa Clara Valley.

Some selected observations and quotes follow to lend perspective to the problems of aircraft noise measurements and evaluations. The World Health Organization definition of health is as follows:

"Health is a state of complete physical, mental and social well-being, and not merely an absence of disease or infirmity."

As Dr. William Burns expresses it:

> "It is quite clear that health is prejudiced by interference with peace of mind, privacy, the pursuit of work or pleasure, or with the basic requirements of natural and undisturbed nightly sleep. Noise can interrupt sleep and rest, cause annoyance or disturbance, interrupt conversations and trains of thought, inflict physical damage upon the ears, and produce emotional effects such as fears."

There are physiologic effects from noise, and particularly sudden, loud, intermittent noise, and these are aotonomic physiologic effects and include blood pressure increase, pupillary reaction, vascular spasm and cardiac rate increase. These autonomic effects outlast the noise stimulus and are peculiarly parallel to the effects from smoking a cigarette. The correlation of the possibility of frequent, sudden noise effects on the autonomic system closely paralleling the effects from smoking are obvious.

Audiogenic seizures, due to sudden, loud noise exposure (and similar to induction of seizure to light stimulus) occur in 1 percent of epileptics. Disturbances of sleep, both in a lightening of sleep levels and to awakening of people, are detrimental and deleterious to health. There is accumulating evidence that artificially varying patterns of sleep levels, which are physiologic and self-regulatory, may be detrimental.

An article in "Lancet" (December 1969) indicated an increasing incidence of mental illness and mental hospital patient load in residential areas close under the Heathrow Airport airflight pattern. Other information from Heathrow points to deterioration of school work where the airport noise is loud. In this country, presbycusis is a problem—this is a loss of hearing in higher tone levels in older people, generally attributed to the frequent and constant amount of noises in our human area.

Studies of African tribes would indicate that older age groups there do not suffer hearing loss as we find it in our urban areas. Obviously, any increase in noise burden would increase this hearing deficit.

In San Jose and nearby, as is seen below, there is already interference with communication (teaching at schools, and interference with the care of patients at Agnew State Hospital). Conversations with officials at the San Jose Unified School District indicate that six of their schools are experiencing interference with teaching and communication due to aircraft noise. (College Park, Jefferson, Longfellow, Edison, Washington, Webster and Bachrodt). College Park School is impossible to use, and the noise there is described as "earthshaking." The officials here feel that noise levels over 90 decibels are impossible to work under, since this interferes with the teaching and communication.

The appended letter from Dr. Sandritter, Medical Director, Agnew State Hospital, is excerpted as follows:

> "This increased traffic poses a most difficult problem for us in the operation of our west area hospital facility. The noise generated by this traffic seriously interrupts our treatment

> program and is generally disruptive to all activities of both patients and staff."—April 23, 1969.

and the second excerpt,

> "It is also true, however, that with the recently increasing activity, the patterns are again apparently being varied and we are experiencing a considerable increasing incidence of planes passing directly over our west facility. The resultant noise is again causing a serious disruption of activities and interference with our patient care and rehabilitation program." —July 1, 1970.

A brief description of noise concepts and measurement is as follows: A decibel is a unit of sound measurement, actually a sound pressure level, and this is done on a logarithmic scale. Consequently, an increase of 10 decibels is equivalent to a doubling of sound. In measurement of aircraft noises, a common measurement used is the PNdB (perceived noise in decibels), which is a weighted scale derived from the audiometric scale A rating and adjusted to accommodate for the higher-pitched noises from aircraft engines (particularly turbo-fan and turbojet) and their effect on humans. The State of California has chosen, instead, to use the dB(A) scale, since this is felt to most closely approximate the human ear response.

A simple numerical conversion from dB(A) to PNdB involves the addition of 12 to 13 decibels. For aircraft noise, indices such as the Noise and Number Index (NNI) and the Composite Noise Rating (CNR), and California's Community Noise Equivalent Level (CNEL), all have been devised to evaluate the noise tolerance levels to aircraft flights which are necessarily intermittent. Some indices are scale weighted to take account for increased annoyance of night flights, and some for evening flights. Using the California CNEL index of upper noise limit tolerance, any regular aircraft noise levels about 84-85 decibels would be unacceptable to the majority of residences if flight frequencies were three per hour during the day hours from 7:00 a.m. to 10:00 p.m., and around 89-90 decibels if flight frequencies were one per hour. This, in general, agrees with Dr. Kryter's Noise and Number Index scale using 100 PNdB levels, 30 to 40 flights daily (2-3 per hour).

The two graphs from Dr. Kryter's article are projected for audience visualization. The first indicated typical, intermittent noise levels produced by transportation vehicles at certain distances from the noise source. A passenger car at 15 to 25 miles per hour, 50-foot distance, 72 PNdB—at 50 or 60 miles per hour, 85 PNdB; a truck or motorcycle at maximum highway speed or accelerating at 50 feet, slightly over 100 PNdB; a turbo-fan aircraft on approach, 500 feet altitude (typical altitude of aircraft two miles from touchdown) 112 PNdB (100 dBA); while a short, medium-range turbo-fan aircraft on takeoff at 1500-foot altitude (typical altitude of aircraft three miles from start of takeoff—directly over West Wing, Agnews State Hospital) 100 PNdB. The two curves for landing and takeoff indicate that Dr. Leo Beranek has stated:

> "On balance, the landing noise for most turbo-fan aircraft

is at least as annoying as the takeoff noise; in many instances more annoying (due to the whine of the intake compressor)."

The second pictograph indicates the jet aircraft takeoff sound patterns from the start of takeoff roll, or where the airplane first starts its acceleration to flight. It can be seen from these graphs that for trips less than 2,000 miles, the 95 to 100 decibel PNdB noise pattern will be approximately a mile and one-half wide and extend more than 30,000 feet, or almost six miles. Where the trip is over 2,000 miles and the loading is heavier, the 95 to 100 PNdB noise pattern extends over 50,000 feet or approximately 10 miles. Accordingly, in San Jose, if the planes are taking off southward, this noise level would reach far into residential areas beyond the city center. On the average, 15 to 20 percent of the flights take off southward, particularly in the wintertime when the weather conditions so dictate. As indicated from remarks above, inflight or landing noise in this same pattern would be the same or a little less than these outflight noise patterns.

Mr. James Nissen, San Jose Airport manager, is to be congratulated on his attempts to improve flight procedures and flight patterns to reduce noise over the City of San Jose. These modifications are helpful but do not appear to be helpful enough, particularly since they will be more than offset by increasing frequency of aircraft in and out flight.

The FAA is directed to set noise standards for airplanes, but unfortunately not those in service now, and this includes 747 jets. In 1966 Dr. Leo Beranek stated: "In the next 10 to 15 years the only possible significant alleviation of the annoyance will be through improved flight procedures and substantial modification of houses to exclude exterior noise." Unless the airline companies can be persuaded to invest some one to two million dollars per airplane for noise reduction equipment, this prediction will, unfortunately, be borne out.

The State of California's provisional noise standards are to go into effect on December 1971, unless legislative act will set this deadline aside. The legislation to do just this is currently alive and pending in the State Legislature, with strong forces pushing for the passage of this postponement. Such postponement of reasonable noise level regulations for aircraft is of great concern to SOVAC. As is explained above, the wide discrepancies between tolerable aircraft noise levels and projected noise contour levels based upon the San Jose Airport expansion plans has moved SOVAC to raise these serious questions and objections which they have posed here today.

Thank you very much.

Dr. MEYER: Well, thank you, sir.

Of course, it's quite obvious from the information you presented that objectionable and unacceptable noise levels are going to be created over large areas. My suggestion is that under the new Airways and Airports Improvement Act of 1970 no federal monies can be made available to a community unless a hearing has been held for all interested groups. As a matter of fact, as was pointed out earlier, some people have been successful now in going back on even an approved project, such as occurred with the AEC under the provisions of the environmental quality or Environmental Policy Act, Public Law 9119, and even for a project that had already been approved in the past; there is a need for this environmental concern. So my suggestion is that you work very closely with the appropriate authorities in the community and you will find out just exactly when these hearings are going to be held, if they have not been held, and to see to it that this information gets into both the Environmental Impact Statement hearing proceedings and the proceedings—and the Airport and Airways Act Improvement Proceedings.

Dr. **HAYES**: My understanding about San Jose Municipal is that, while it was originally bonded within the city, these bonds are either being paid off or have been paid off, and at the present time the airport is self-sustaining. So there is not necessarily—at least at this time—any need for federal funds or otherwise funds.

Dr. **MEYER**: In other words, this proposal isn't really an addition to the airport—it's just adding traffic?

Dr. **HAYES**: Well, there will be additions on a scaled margin. They have three five-year programs in which they will be expanding various facilities.

Dr. **MEYER**: But this is all municipal money?

Dr. **HAYES**: Apparently the money will be generated by the airport itself.

Dr. **MEYER**: It creates a most interesting problem because I don't know whether the State of California has for local projects of this sort, environmental impact statement procedures. It highlights a problem of real interest, and I, quite frankly, don't know how the Federal Government, other than being a friend in court with you, can act. I am going to have to look into it. I don't know.

Dr. **PLAGER**: This wouldn't require a NEPA statement, would it?

Dr. **MEYER**: It won't require anything. It seems to me it's a dialogue between the citizens and their own government. This is where it stood so far. Apparently there was some point raised this morning that whenever flight paths are altered and get FAA approval, that that will require an Environmental Impact Statement, if, indeed, there is going to be increased traffic. But the question that I really don't know about is whether they could conceivably even be, by using larger aircraft on the same schedule, not increasing the number of their planes but increasing the traffic density. But then the airplanes they use would be part of the 707 you mentioned.

You are presenting a most difficult problem from a federal viewpoint that I am going to have to get more information about. I don't know the answer. I guess it's a sad commentary on some of our situations.

Dr. **HAYES**: How can I follow up on this to find out from you or your Agency what further we can do?

Dr. **MEYER**: I would suggest, sir, that in addition to the fact that you have come here and testified—and I have made due notation of it—I would appreciate it if you would give me further details in writing at the Environmental Protection Agency in Washington, following my penchant for getting all the facts. I want data as to the whether this is a municipally owned facility, and to what extent, if any, federal money is or is not involved, and things of that nature. And then I believe I will be able to help you more than I can at this point.

Dr. **PLAGER**: Have you been in touch with your own Department of Aeronautics, State Department of Aeronautics?

Dr. **HAYES**: Well, more or less. They have—I really don't think they have given us too much encouragement. As a matter of fact, in the State Legislature now is a bill to set aside the proposed noise regulations.

Dr. **PLAGER**: I am familiar with that, but there may be licensing requirements, particularly if runways substantially are involved here.

Dr. **MEYER**: And there might be some things in the California Legislature that you might look at. You might try to get together with the Department of Aeronautics.

Dr. Hayes, if you will write me and give me more information, I have some legal people on my staff and we will try to give you some advice and assistance, recognizing we don't take sides in these fights. We only try to provide you with the facts.

Dr. **HAYES**: Well, that's appreciated very much.

Dr. **MEYER**: This is—again, I hate to sort of bring this to an abrupt end. I will say this San Francisco hearing has been a very fruitful one and a unique experience of high value to myself and the members of the panel.

In conclusion, I would like to state that yesterday there was some comments about the fact that the California Department of Public Works was unable to be here. We have been in communication with the Director, Mr. Moe, and he assures me that in fact they really did have some very overriding problems that required the involvement of virtually his entire staff. He has volunteered to provide for the handling of some questions in writing or, if at all possible, he and some of his people will be present at our hearing in either New York or in Washington.

I should like to give my very special thanks to the panel for sitting with me for long hours, and I should like to thank my staff and particularly Mrs. Seidman, my Executive Officer; Mrs. Dade, my secretary; Mr. Hardesty; my Press Officer, Mr. Todd Bergesen, and the local noise abatement officials of Region IX.

Thank you very much, all of you. And a thank you to all who have participated.

This hearing stands adjourned.

(The hearing concluded at 5:35 p.m.)

WRITTEN TESTIMONY SUBMITTED FOR THE RECORD

DAVID S. LAWYER
1591 3 Ave. Apt. A
Walnut Creek, Calif. 94596

Noise sources may be roughly divided into two categories; natural noise and artificial noise. Natural noises are the noises created by nature such as rain, wind, thunder, bird chirping, wild animal sounds, human voices etc. Some of the natural noises may be pleasing to the ear, and do not require any regulation. Disturbing noises created by man yelling, stomping his feet too loud etc. are fairly well regulated by local laws of disturbing the peace etc. and need not be subject to federal control.

Artificial noises are made directly or indirectly by the use of a tool or machine, and since it would be unduely costly to have different standards for noise controls on tools and machines for each state, they should be subject to federal regulation. The regulation must be all inclusive and apply to all types of tools and machines, including all types of motors wherever they may be used.

The basic principle of noise control should be to prohibit noise which will do more than an insignificant amount of damage to one's hearing. Noise of lesser intensity or duration should be subject to the principle of compensation where the person(s) making the noise pays the person(s) bothered by the noise. To require that compensation be paid directly to the person(s) bothered would in most cases prove unwieldly, due to the difficulties of determining the source of the noise and/or the duration and intensity of the noise and/or how much the noise actually bothered the person(s) converted into dollars.

Nevertheless, the compensation principle may be indirectly applied in most cases. For example, consider the noise of motor vehicle exhaust (including motorcycles). If each vehicle owner had to compensate those he bothered, he would find that he would save money by buying a quieter muffler, unless the one he had was already very quiet. Thus for each class of vehicle and typical conditions of use, there exists an optimal muffler to use (including mufflers which have not yet been designed). The federal noise control agency would attempt to calculate the types of mufflers which should be used on motor vehicles, so as to minimize the sum of the yearly cost of the mufflers and the noise created by them. In making such calculations, it should be kept in mind that as the national income per capita in the U.S. increases, the cost of the annoyance of noise will greatly increase. Also, a muffler may not reduce noise as well when it is nearly worn out. These considerations should result in the selection of even quieter mufflers than would otherwise be selected. The noise control agency would then require the use of these (or better) mufflers. Even with very good mufflers, there would still be some annoying noise produced. The compensation for this would be collected by means of a fuel tax and distributed to persons living along heavily traveled roads. This distribution might take the form of reduction of property taxes with perhaps some provision for corresponding reduction of rents.

The proposed federal agency to regulate noise would publish its research and make it available to major libraries. Any such report which proposes the implementation of a noise tax and/or specifies required sound control equipment would be reviewed by the public prior to adoption. The agency would be required to use the compensation principle, and present detailed calculations of its application in its research reports.

The regulation of aircraft noise could operate in much the same manner as the regulation of motor vehicle (road) noise. Planes of various categories should have to adhere to the set optimal noise limits as well as pay compensation to the people they bothered. Automatic, unattended, noise measuring apparatus could be installed at various locations to monitor aircraft noise. Perhaps citizens concerned about aircraft noise could be supplied with noise measuring equipment, and identify, with the aid of binoculars in the daytime, the responsible aircraft. The locations of noise monitoring equipment should be a carefully guarded secret, since otherwise pilots might avoid flying near them.

The funding for research into noise suppression equipment should be charged to the users. For example fuel taxes could pay for such research for automobiles, trains, and airplanes. For very special noise suppression equipment which is only needed at a few places, the owners of this equipment would have to finance such research or do it themselves. In a few special cases the government might subsidize such research out of other funds.

Research into noise pollution involves more than just designing noise control equipment for the technology currently in use. For example, perhaps the best solution to the motorcycle noise problem would be the improvement of electric motorcycles. To eliminate noise of digging in the street, utility tunnels may be used. Each major street would have such a tunnel which would be large enough to hold all of the pipes and cables for all the utilities. When the time comes to replace a pipe cable etc, or add new ones, they are simply laid in extra space available in the utility tunnel without tearing up the street. In the long run, the extra cost of utility tunnels may pay for itself in lower cost for replacement and repair of utilities. Since a man can walk or crawl thru these tunnels, the detection of leaks in the incipient stage is easy.

In summary the federal government should establish a noise abatement agency, which would specify noise control apparatus as well as distribute compensation to those bothered by noise. It would also engage in broad scope research into noise control.

STEVEN R. SKALE
1703 Monticello Rd.
San Mateo, Calif. 94402

1. Bay Area background sound pressure level data taken by me during January, 1970. Readings were taken with University of California at Berkeley equipment and were used in my article published in the March, 1970 "California Engineer" magazine when I was a student at Berkeley.
2. Much attention is beginning to be given to "noise pollution" as consisting of high level noises already shown to cause varieties of psychological and physiological damage to humans. There is, however, a different and separate kind of sound continually transmitted throughout the entire Bay-Peninsula region which, at the *very least*, constitutes a nuisance in *destroying* the natural acoustic peace. It appears as a constant deep rumble which seems to radiate out of the Bay basin in clearly audible fashion during periods of apparent local silence, and is most strikingly noticeable from the many mountain ridges which look down into the Bay. This constant low intensity sound which, to my ear, ranges ~45 to 55 dB and consists primarily of monotonous low frequency tones (I have never done a frequency analysis), constitutes an

elevated minimum background sound level which drowns out the extremely quiet (<40 dB(A)) natural minimum levels provided by this geographic region. Although I know of no studies considering the effects of continuous (24 hour) exposure to low amplitude sound or continuously raised background levels, the potential for causing tension, anxiety, and accompanying physiological degradations may be sufficient to justify investigation, especially in view of the fact that this elevated minimum background noise level can be escaped almost nowhere in the Bay Area. I assume there is no direct harm caused by the acoustic energy itself to the body, but perhaps heretofore undetected hearing loss (Noise Induced Permanent Threshold Shift) or response does result to some degree.

As stated previously, the Bay's background rumble is at least a nuisance which decreases the general desirability of the area. Further, it is a possibly harmful alteration of a natural state, and as such, studies of its nature, effect, and control should be a part of any comprehensive survey of Bay Area "noise pollution."

BRADLEY COLLINS
402 15th Ave. East
Seattle, Wash. 98102

The problem of poor noise control requires immediate change. The notion that we all need to be aware of the dangers of noise pollution before effective controls can be established is inadequate substantiation of the present lack of effective and enforceable standards.

The noise pollution controls available for the Seattle-King County area of the State of Washington are essentially ineffective, and proposed changes in noise control have not succeeded in becoming effective as yet.

DOUGLAS T. CORBIN
114 Crest Ave.
Richmond, Calif. 94801

I do not propose to be present at the forthcoming S.F. public hearings to testify, but I would like to submit the following in lieu thereof:

I am a resident of the Point Richmond area, which is immediately adjacent the Richmond refinery of the Standard Oil Co. of California. Periodically, the rush of escaping gasses being vented up the safety flares' stacks creates a deep, booming, and sometimes physically felt noise and sensation. Windows will rattle sympathetically and the frequency of the sounds created in these great stacks is so low as to be uncomfortable, as well as annoying aurally.

This practice of venting unwanted gasses to flares is common to the refineries in Contra Costa County, and perhaps common to all refineries, but the noise created in entirely unnecessary. I know this since I have called and complained to the night operators at the local refinery and on one occasion, a plant foreman came to my house, explained which of the flares was creating the disturbance and promptly remedied the problem.

We are not always so fortunate as to receive immediate surcease, as on that occasion, however, and often times the noise will continue uninterrupted for hours, irrespective of complaints lodged. That others have not obtained satisfaction simply by complaining to the offenders is also attested to by the clipping I am enclosing.

Pollution Protest in Rodeo

RODEO—A group of citizens has begun to obtain signatures for petitions expressing their dismay over the noise and light emitted by the flare at the union Oil refinery.

Headed "Concerned Citizens Against Union Oil Noise and Flare Pollution" the petitions are being circulated in the Bayo Vista development and the houses in Rodeo on the hill above Bayo Vista. Both areas are to the southeast of the Union Oil plant.

The flare comes from the burning of gasses during the refinery processes. The combustion produces a constant pulsating concussion sound which can be heard day and night in varying degrees around the refinery area.

Some residents cite as examples of the problem the fact that small children are unable to sleep and older children find it difficult to concentrate on their schoolwork.

DONALD W. BALDRA
2430 Tice Valley Blvd.
Walnut Creek, Calif. 94595

I would like to call attention to a noise pollution problem in Walnut Creek where I live. Daily, dozens of east bound commercial jets go over creating an undulating roar, both day and night. As many as nine of them fly over within a half hour.

I hope this problem will receive a high priority and suggest that an interim solution would be to change the routes every three months.

Please include this letter in the transcript of your hearings.

T. D. HARRIMAN
19 Sequoia Rd.
Fairfax, Calif.

In connection with your forthcoming meeting about noise abatement, I would like to submit my following observations:

Of the various sources of *unnecessary* excessive noise the *motorcycleist* is the worst offender. From a mechanical view a motorcycle need not be noisy—Highway Patrol and city police cycles being constant examples to the contrary. Apparently (and from some high-school memories I can verify) that the operators of many of these machines get a feeling of power and have the knowledge that they are being noticed while they roar about or intermittently "gun" the motor. Whether they are in an urban area disturbing people or out in the country scaring animals and birds—this is ridiculous.

Local police tell me that they have just about given up trying to control this noise source because it is a frustrating waste of time. If on their own initiative or because of a citizen's complaint they do issue a citation for Excessive Noise and/or Illegal Muffler, the culprit almost invariably will re-stuff his muffler, report to the Highway Patrol office, and have the citation voided because his muffler is now passable. Out-of-sight of the Patrol office and the muffler is again unstuffed and we start all over again.

Mufflers should be made tamper-prof and being caught with any other kind should be prima-facie evidence warranting a fine. Enforceable laws including decibel limits would also help.

JOSEPH J. HILLNER
285 Firestone Drive
Walnut Creek, Calif. 94598

If appropriate, I would like the following comments made part of the testimony of the meetings on noise pollution scheduled for Sept. 27, 28 and 29 in San Francisco.

It is time we all made noise, a lot of noise about the increasing din we are being forced to endure.

The major offenders I am incensed by are:

Aircraft, commercial jets (perhaps military too) and private light aircraft.

Traffic noises, particularly large trucks, and "souped-up" automobiles.

Motorbikes and motorcycles, the culprits with often no redeeming value.

MOTORBIKES:

Unmuffled, deliberately manipulated to make noise, and in many cases a juvenile plaything not even used for needed transportation.

Certainly this senseless noisemaker can and should be eliminated by local ordinance and enforcement, and state laws to control the larger cycles.

Why cannot *effective* mufflers be required?

Why cannot existing laws (if any) pertaining to the small bikes and minor operators be enforced?

And another question which is probably unanswerable,—why do parents permit their children to operate unlicensed trail type bikes on neighborhood streets to the discomfort of their neighbors, and in possible violation of the law—if such laws indeed exist?

"NORMAL" TRAFFIC NOISE—LARGE TRUCKS:

A continuous background roar from a thoroughfare (not even a freeway) half a mile away, punctuated frequently by the resounding sound of the large tractor/trailer and smaller trucks as they strain in lower gear from a stop light, or up an inclined road. In order to sleep undisturbed, the windows must be closed tight regardless of the weather.

AIRCRAFT:

The cacophony of the jet airplane—even at high altitudes, and the harsh intrusion of the lower flying light airplane. This is no longer an occasional intrusion. It is a frequent, daily, and at times an almost continuous roar of overwhelming sound.

When we moved to this area of Walnut Creek more than three years ago, the overflights of jet planes consisted of a few on only occasional days—perhaps one or two days in a month. This year, there has apparently been a change in the flight paths because jet overflights are daily and numerous.

Below is a log of overflights by jet and light aircraft taken at random when I happened to have the opportunity to do so. It is not a selected sample to prove my point, and not all hours of the day are as heavy as some shown. However, it does indicate that there are periods when the noise of airplanes is almost constant.

Consider that the noise of one jet passing over this area may persist for from one to one and one half minutes, thereby overlapping in some instances to form continuous roars.

OVERFLIGHTS—WALNUT CREEK, CALIFORNIA

	Thursday, August 26, 1971	Period: 1 hour 2:10-3:10 P.M.
	Jets	*Light aircraft*
	2:10 P.M.	
		2:12 P.M.
		2:18
		2:20
	2:27	
		2:29
	2:30	
		2:31
		2:33
	2:41	
	2:51	
		2:56
		2:59
	3:00	
		3:01
	3:02	
		3:04
	Friday, August 27, 1971	Period: ½ hour 8:00-8:30 A.M.
	8:00 A.M.	
		8:01 A.M.
		8:03
		8:14
	8:21	
	8:24	
		8:26
	8:28	
		Period: 45 Min. 3:30-4:15 P.M.
	3:30 P.M.	
		3:43 P.M.
		3:47
		3:51
		4:03
		4:12
	Sunday, Sept. 5, 1971	Period: ½ hour 8:00-8:30 A.M.
	8:10 A.M.	
(Consist-	8:17	
ent with	8:25	
8/27)	8:30	

Saturday, Sept. 11, 1971	Period: Midnight 9/10-1:00 A.M. 9/11 45 minutes
Total 6 jets	
Sunday, Sept. 12, 1971	Period: 1 hour approx. 8:00-9:00 A.M.
7:55 A.M.	
	8:05 A.M.
8:10	
8:15	
8:20	
8:22	
	8:28
8:31	
8:36	
8:43	
8:47	
8:53	

We live at a distance of more than 40 automobile miles from SFO International airport, and about 30 miles from Oakland airport. When we looked for a home, we considered a better home value in Foster City, but decided against it due to its proximity to the SFO airport, and the probability of airplane noise. For two years jet noise was no problem. Then we suddenly find ourselves in the traffic path.

The point is, that it could be argued that people who knowingly settle near existing major airports (may) have no complaints due them. But, when your choice is based in part on avoiding the intrusion of that noise—and you pay a penalty in home cost, and longer commutes to and from work (also a cost factor) and longer travel to and from that airport when you must use it, and then find yourself victim of the very intrusion you sacrificed to avoid, and are still paying the premium cost—it is unfair, unjust, and infuriating.

From the log, it should be evident that I intended for some time to lodge a protest. The catalyst to act was a news item in the Contra Costa Times (9/15/71) reporting the "inability" of any of our county officials to attend the EPA meetings on noise pollution to be held in San Francisco later this month. Also, no notice of the meetings were sent to any Contra Costa city or county officials.

This news item was amended the following day (today) to state that county supervisor Mr. Warren Boggess was to speak at the meeting—but not as a county supervisor, or representative of the residents of this county, but as chairman of an airport study committee. It can only be hoped that Mr. Boggess can be objective and represent his earthbound noise absorbing constituents when he is also owner of Pacific States Aviation Company at Buchanan Field in Concord.

We should be properly represented, we should be heard. The airplanes, motorbikes, trucks, and revved up sports cars certainly are!

PETER B. JANSEN
1227 Spruce St.
Berkeley, Calif. 94709

In response to a recent press article I am attaching written (only) testimony for the forthcoming hearings on noise pollution.

Subject: Motor Vehicle Noise

GENERAL STATEMENT

Society is increasingly afflicted with many sources of unnecessary noise. One of the most unnecessary and most pervasive of these is motor vehicle noise. It is becoming worse because of the increasing proportion of noisy vehicles.

PERSONAL EXPERIENCE

My personal experience is illustrative. Our home, which we bought several years ago, is located on a two lane feeder street on an uphill grade. It is fairly well-travelled, as it provides access to fully developed residential areas further up the hill. There is virtually no commercial or through traffic. At the time we acquired this home traffic was dominated by the typical, fairly quiet family sedan. While the sound was occasionally bothersome, it was well within tolerable limits. It has since become completely intolerable owing to the greatly increased proportion of noisy vehicles—motorcycles, sports cars, foreign cars, "hot" American cars, pickups, and vans. This has been exacerbated by the failure of local police to enforce speed limits, and the failure of police agencies generally to enforce the section of the California Vehicle Code which prohibits modification of muffler systems to a noisier level.

RECOMMENDED ACTION

The only realistic solution is control of noise at the source. Highway agency talk about barriers, etc., in sensitive areas and location engineering are largely a type to diminish opposition to highway proposals.

Following are separate proposals, in order of priority, not a package, since opposition or technical problems with one would then jeopardize any mitigation whatsoever.

1. *Passenger Cars, Pickups, Vans and Small Trucks*

Although its noise should be reduced, the example of the "quiet" family sedan makes it obvious that there is absolutely no excuse or reason for noisier vehicles in these categories.

No one should be allowed to manufacture, import, assemble ship, sell/buy, own or operate any such vehicle which is noisier than the "quiet" family sedan. I suggest immediate Federal legislation to this effect, to become effective on year after passage.

2. *Replacement Mufflers*

Many vehicles are excessively noisy, not because they were that way in their stock condition, but because of noisy mufflers as replacements or as optional extras when new. These noisy mufflers are often pushed in mail order catalogs as "hot" items.

Federal legislation should require all replacement mufflers or muffling systems to carry serial numbers which would indicate the vehicle models to which they are applicable, along with a certification that they would produce no more noise than the stock muffler (or less if items 1. and 3. are in effect and would give a lower value). To install an inappropriate muffler on a vehicle would be prohibited.

3. *Motorcycles*

It appears that the same action as in item 1. would be applicable to motorcycles.

However, I am not an expert. The necessity for compactness may create technical and design problems which are not in automobiles. Should this be the case I suggest the following Federal Program:

(a) Until the design problems are solved, place a quota on the import and domestic manufacture of motorcycles. The annual figures to be no greater than those of 1970, to start, declining 10 percent yearly.

(b) A special excise tax on motorcycle sales. Revenues to be used for research and design of muffling system and/or new engine types no louder than the "quiet" family sedan.

(c) After completion of (b), a Federal requirement that all motorcycles be equipped with the designed system, or its equivalent in noise suppression.

4. *Large Trucks and Construction Equipment*

This is suggested as a late area of action because of the political power of the associated industries and unions. Otherwise (except for wind and tire noise on high speed trucks) there is no reason why the sanctions recommended in item (1) could not be applied to these vehicles also.

5. *Later Programs*

Although it is practical to adopt as a temporary standard, the "quiet" family sedan makes more noise than desirable or necessary. Research, design, and legislation to make all vehicles quieter than this temporary standard should be pursued. Federally funded research and design should come out of the Highway Trust Fund.

A NOTE ON OPPOSITION

One often hears that strict muffling requirements would cause power loss and engine damage. A person whom I know to be well informed told me that this is not the case—properly designed muffling systems can enhance power.

Aside from those who actually believe this myth, opposition to vehicle noise legislation will be because of cost and the loss of sales appeal of motorcycles, sport cars, etc. In addition many truck drivers and equipment operators are said to like to hear their noisy rigs "rap".

MRS. MITCHELL MADISON
848 Laverne Way
Los Altos, Calif. 94022

Although Mr. Lloyd Krause, the chairman of our Noise Abatement Committee in the City of Los Altos, will be presenting the official report of the group at next week's hearings, I am sending the enclosed rough-draft copies of a supplementary set of observations, mainly re: aircraft noise pollution, if only for inclusion in the record.

We hope to be present for at least Wednesday's portion of the hearings, but should this not be possible, may I thank you and your group for the work you are doing here. Hopefully it will act as an effective catalyst in correcting this problem of noise pollution. The timing of your hearings is excellent. Never, in the 12 years we have lived in this community, have I observed noise-induced distress to the degree that it has been present here this past summer. This has been evident in many of the neighborhood pets (animal variety) as well as in some of our more stoic citizens. Ironically, we have a collie who barks in response to *all* noisy machines, above and on the ground. She has now become a 'house-dog.' Observations on: *NOISE POLLUTION, NORTH SANTA CLARA COUNTY, CALIF.*

As a member of the Noise Abatement Committee of the City of Los Altos, California, I have noted a sharp increase during the past six months in complaints about environmental noise within our community. There seems to be less reticence, expressing such complaints. This change of attitude may be a healthy sign, in the long run. As community noise levels continue to increase, even the less sensitive souls begin to be affected. In fact, several of my most stalwart acquaintances, who previously scoffed at the "noise-nuts", and categorically denied that they, themselves, might ever find noise disturbing, are now the ones who are yelling "turn it off!", in a voice even more distressed than their predecessors.

If one listens carefully, one finds a common thought running through conversations with people in all walks of life. This is particularly true during the past decade, yet recently it has become a near-universal goal, continually sought . . . yet seldom achieved.

> "We are just looking for a place where we can have a little peace and quiet."

* * * * *

Such a place will not be found easily, in Santa Clara County nor in any of the urban-suburban regions of the world. Environmental noise levels in our region have risen to the degree that "peace and quiet" has become a near-obsolete concept.

Some individuals are not disturbed by this noise. By virtue of location, because of hearing loss or constitutional insensitivity, these people are unaffected, and they often express wonderment as to "what all the fuss is about." Others, who discover that they cannot begin to cope with the noise from the Foothill Expressway or Highway 280, for example,—and who have the means to relocate—do so, at the earliest opportunity. Of course, if they choose to relocate within the same north county area, they run the risk of having traded freeway noise for that third-dimensional "sound of progress", aircraft noise. Many families have decided to move completely out of the bay area, seeking a site which is neither down-wind from *any* size airfield, nor inside a fifty-mile radius of a major airport. Such places are hard to find.

The third, and largest, population group is caught in the middle-unable to move, unable to cope satisfactorily with the increasing din. The instinctive reaction, when first confronted with such a problem, is one of "fight or flight." Lacking the means to flee, people try the alternative course. They soon learn that, to date, the system of "fighting" to restore some measure of quietude is for the most part illusory. Ground rules continue to favor the noise-makers. Realistic regulations and consistent enforcement of violations are quite non-existent. This precludes any sort of fair "fight." Caught in a situation of stress, people try to cope with the problem in a variety of ways, some more successful than others. In the case of noise-pollution, they may be at an even greater disadvantage. Robert and Leona Rienow, in their book *Moment in the Sun*, quoted Norman Cousins' editorial, wherein he stated that noise impedes the process of sequential thought. When it becomes so noisy that persons "can't think straight", problem-solvers may have to work under an additional handicap.

Such is the situation which generally exists at this moment in our area.

* * * * *

Mr. Lloyd Krause, chairman of the Noise Abatement Committee for the City of Los Altos, Calif., is submitting detailed information on ground-noise to your committee. The balance of my report will deal with specific problems of air-noise.

As long as there have been airplanes, there have undoubtedly been airplanes over the S.F. Bay region—but never in such quantities as now exist. Northern Santa Clara County skies have become a vast interchange for aircraft of all types. The regional FAA officials have arbitrarily re-routed a great bulk of incoming commercial air traffic in this direction, just prior to landing them at San Francisco and Oakland Airports. San Francisco Airport is in the northeastern sector of San Mateo county, and is owned jointly by the county and the city of San Francisco. It would appear that, through a combination of judicious planning and cooperation from the FAA, these co-owners have been able to successfully foist a great bulk of the noise pollution and air pollution, generated by their airport operations, onto residents of the next county—25 miles to the south. That the unfortunate recipients do not gracefully accept this out-fall is understandable. The Oakland situation is a similar one.

The 747 jumbo-jets seem to require a longer, lower approach for landing, thereby negating any of alleged noise-reduction benefits assigned to them, as far as we are concerned. The new DC-10s have been billed as "the world's quietest airplanes." Ostensibly they generate less noise on take-off than conventional jets do. We have only observed their approach-for-landing noise. They do not live up to their billing. Whereas the 747 sounds like a freight-train passing overhead, the DC 10 sounds like two freight-trains, racing for the station. To label any jet airplane as "the world's quietest anything" is misleading anyway. Much like saying "the world's slowest quick-sand."

The FAA's new "Keep 'Em High!" policy has yielded no observable improvement here. To some extent it has only served to widen the noise-umbrella over the valley. This regulation does not seem to apply to the 727's which service the inter-urban route between SFO and San Jose, but how high can you keep 'em when you are only flying a distance of about 30 miles?

In stormy weather this entire mass of machinery reverses its direction, with the prevailing winds, and the valley floor becomes a vast echo-chamber, as plane after plane climbs-out, following take-off. An even wider area is disturbed in this instance.

The city of San Francisco and the County of San Mateo have set up a noise abatement and complaint office near their airport, in Burlingame. Citizen complaints may be registered there by phone. Few residents of this area utilize this device, and understandably so. First, it involves a toll call. If the call is made, the complainant finds that he has not actually reached the "airport noise abatement office", but, instead, he is talking to an answering service. A gruff, female voice barks, "Sound Control!", in a tone implying, "Now, what's *your* beef?" If the caller perceives what he has dialed in to, he will eventually be asked to leave his name and phone number, and then must await a return call from the director of the Noise Abatement Center, usually the net day. At this juncture most people will be inclined to feel, "Forget it!"

* * * * *

The second major source of aircraft noise to be considered is that of the military. In our case this is the Naval Air Station at Moffett Field in Mountain View, California, for the most part. In the early 1960's the Navy transferred its fighter jet squadrons out of Moffet, because of noise and safety problems. P-3 patrol planes replaced the jets. P3's are modified Electra-type turboprops, hardly cherished for their noise-producing ability. *Much* of the engine-noise from the P-3's is in the low-frequency range. *All* of it is most intrusive as an environmental pollutant. The side-line noise is higher-pitched, metallic, abrasive in character, and it carries for blocks. It is much as if a roller-coaster was operating nearby, as these continuous touch-and-go training flights circle the region. Because of the intensity of the low-frequency sound of these craft, it is difficult to blot them out with ear-plugs. You find you are picking up their presence through the balls of your feet, as they rumble past. Pilot trainees come from several allied countries, in addition to our own group. These aircraft can easily be detected frequently, as they cruise along the coastal recreation areas between Half Moon Bay and Big Sur.

Other aircraft frequently found at Moffett are listed below.

1. USN P-2's. although these are supposedly being phased out.
2. USN Grumman S2B's and the later model S3A's. Extremely noisy planes.
3. Carrier-based fighter jets, just dropping by.
4. Air Force training planes, similar in sound and appearance to the S2B's.
5. FAA training planes, practicing touch and go landings.
6. Helicopters.
7. Passenger-type jetliners, carrying visiting dignitaries.
8. Any new plane, ours or our allies', that seem worth showing-off.

The Canadian Air Force patrol plane of the "Argus" type occasionally visits the area, leaving in its wake the most intense, reverberating trail of noise one could possibly imagine. It has to be heard to be appreciated, as do all of the others.

Coast Guard patrol planes and helicopters, Navy and Marine helicopters; also the Convair 990 jet, plus helicopters, two U-2's and a prototype of Lockheed's Q-Star (The Quiet One) at Ames'

NASA facility at Moffett field—this quite completes the bulk there.

Ames is also the site of the Wind Tunnels, which have been the target of a recent noise study, yet to be made public.

* * * * *

Would that this were all, but we still have not included the category of General Aviation. This group is composed mostly of small planes, which make large noise. General aviation airports supplying the north county skies are located in Palo Alto, San Carlos, Half Moon Bay, San Jose, Hayward, and, to a lesser degree, Hollister and Watsonville. The 1,000 ft. minimum altitude, which these planes are supposed to maintain over residential areas, is as outdated as the Wright Brothers. There appears to be little control over this group, anyway, so perhaps it doesn't matter. If I were asked to single out the very noisiest types of light aircraft, I would choose all of the twin-engine types in service here. In addition, the entire Beechcraft line seems to favor high-noise output. If there were a "Screaming Mimi Award" given to the biggest loud-mouth of them all, I would unhesitatingly bestow it upon the Cessna Skymaster. This plane should be grounded.

Air taxis; mail planes; helicopters flown by television traffic-watchers, sheriff's patrols, highway patrols and sightseeing tours —can all be lumped into this last category. Incidentally, helicopters operate under *no* altitude-minimum requirements. At times they operate at such low altitudes that their physical presence becomes as great an intrusion as their noise levels.

It is interesting to note that, with all of the above-mentioned aircraft using north county skies at one time or another on an average day, to some degree, the noise-monitors of the FAA recently reported that their over-all aircraft noise readings registered slightly less than that of the nearby "twittering birds."

There are three separate situations, wherein aircraft noise over the area has been drastically lowered for several hours. (1) When heavy fog prevails, shutting down all airports; (2) When a member of Congress, particularly one who is concerned with environmental problems, has a speaking engagement at Rickeys Hyatt House or the Cabana Hotel; and (3) When a Public relations man from the FAA appears on one's door-step, unannounced, in response to a noise complaint.

Unfortunately, we can't count on any of these often enough to make any significant, long-term improvement. Short of closing down all of the airports in the region permanently, the realistic alternative still seems to be installation of effective retro-fit noise suppression kits on *all* operational aircraft—whether they be civilian or military, commercial or private planes. A recent report from A.B.A.G. contained recommendations for no further airport construction in the Bay Area, interestingly enough. Bless you, gentlemen. A spokesman for the Civil Aeronautics Board recently conceded that there were too many planes flying, and that, for the first time, the CAB recognized the adverse environmental effects of same. And hopefully the major airlines will be made to realize that, no matter how many flying cocktail lounges they offer, how many delicacies they are prepared to serve (accompanied by hot towels and piano bars), no matter what exotic spots they offer to fly people, at cut rate, to—there are a great many people who are no longer interested in flying, except in emergencies, when no other means of transport is available. All of those empty seats are not due to the shakey state of the economy. The public's disenchantment with jets has grown proportionately with the widening areas of adverse impact these machines have created. I have appended a list of more specific proposals for reducing aircraft noise, air pollution and air traffic congestion as well at the end of my comments. If some of these strike you as being a bit much, may I suggest you spend a few days and nights observing our skies. You may recall the German artist who was reported to be bombarding Luftwaffe jets with dumplings some years back. Until about 1965, had I read this news account, I would have thought that the gentleman in question was overreacting just a bit. However, since that date there have been days when I must admit that I've been tempted to write and ask him for his dumpling recipe.

Recommendations for Reducing AirCraft Noise Pollution in Northern Santa Clara County

1. As the FAA had filed no notice of intent to change incoming air traffic routes with the EPA, and as no public hearings were held previous to this arbitrary action by the FAA, they should be required to modify air traffic patterns now being used, in order to lessen air traffic over northern Santa Clara County.

2. Serious consideration should be given to the establishment of permanent air corridors, which would realistically be located over areas of maximum proximity to existing airports. At present this is not the case.

3. Eliminate all commercial airline training flights from the Bay Area.

4. Limit all incoming and outgoing commercial flights to the hours of 7 a.m. through 11 p.m.

5. Request that flight simulators be employed far more extensively than at present in the pilot-training program at Moffett Naval Air Station.

6. Limit said training to active members of the United States Navy, exclusively.

7. Require that noise suppressors be installed in all new models of the P-3 aircraft.

8. Restrict landing privileges of all aircraft not permanently based at Moffett to conditions of emergency, when no alternate field is available.

9. From time to time, remors circulate that the Navy plans to abandon Moffett. Although these rumors are promptly denied, provisions should be made now, in the event that they may prove true at a future date, that would preclude converting this facility into any other type of airport whatsoever.

10. Mark the north county sector "out of bounds" for general aviation, and provide ground monitors to enforce this. Revise airmaps, deleting Foothill Expressway and Junipero Serra Freeway.

11. Eliminate, or sharply down-grade, pre-flight instruction courses presently offered by the High School Adult Education

Dept. and the aeronautics programs presented by the area Junior Colleges and San Jose State College.

12. Increase minimum age for flight instruction and consider introducing quotas for available new licenses, based on an appraisal of air traffic congestion already present in any given region.

—and if all else fails,

Make funds available to affected communities for the purchase of barrage balloons with 1,000 ft. tether ropes, and lettering inscribed on both sides of each balloon, to read:

TURN AROUND! GO BACK! YOU'RE HEADING THE WRONG WAY!

Why we are losing the battle against pollution

What has happened to the environmental crusade? What indeed has happened to the vaunted environmental crusade when anti-pollution laws are safely ignored by the very corporations they should curb; when the Attorney General of the United States urges that we "go slow" on polluters; when an official of a Maine paper company tells a television audience that the reason his firm is pollutting Maine's rivers is because his first obligation is to pay a profit to his shareholders?

It appears that the government is doing only what is expedient, not what is necessary to curb pollution.

The Refuse Act of 1899, probably the strongest anti-pollution law ever passed in this country, prohibited the dumping of any waste products in a navigable stream. The law did not define pollution, however, and historically this escape clause has allowed prosecutor and law-breaker alike to ignore the statute with no danger of retribution.

Nothing has changed radically in 1971. Though the horror stories have been told, the alarm has been sounded and the public alerted to the dangers in global pollution, the federal government remains serene. In fact, it has even further reduced the already flabby power of the Refuse Act by including a "permit program" which, in effect, grants industries a license to pollute. (Why not issue permits to drive 60 miles per hour in a 15 m.p.h. speed zone?)

Another alternative to forceful action is President Nixon's National Industrial Pollution Council. This board, which was created to advise the President on pollution matters, is composed of 200 leading industrialists. Earlier this year these gentlemen advised the President that pollution laws were being framed in response to "emotional appeals." Many new government standards, they insisted, are "incompatible with the economic health of our society."

Curiously, no mention was made of the immense hazards industrial pollution presents to the public health.

Here and there, small steps are being taken to combat pollution, generally under intense pressure from concerned citizens. A beginning has been made in the recycling of solid wastes, and timetables have been allotted to various polluting industries and municipalities to goad them into reforms. Even the new "permit program" is ostensibly designed to upgrade the quality of our waterways.

But in general, if we closely examine impartial surveys (and use our own eyes), we know that we are losing the battle. Why?

The country has not really committed itself to a healthy environment. We are smart enough, or our instinct for self-preservation is strong enough, to keep us walking a thin line at the edge of the abyss. We manage to step back (as we have done in the case of nuclear war) just in time to avert catastrophe. We are at our best in a crisis.

But each of our acts in the environmental crusade is motivated not by ecological awareness but by our sense of self-preservation. We believe we have fulfilled our environmental responsibilities when we prevent boats from being sunk by the wastes in our rivers or people from being overcome by noxious fumes in the street. We neglect most of the strands in the complex and fragile web of life that affect us less directly.

The controversy over the SST was a case in point. The SST would have presented a monumental environmental insult to our planet, yet who led the fight for the SST in Congress? No less a personage than Senator Henry Jackson of Washington, who is widely celebrated as one of the country's "leading conservationists."

Senator Jackson must have been aware of the environmental degradation implicit in a fleet of SST's. But he weighed nationwide degradation against the loss of some payrolls in Seattle, and opted for the degradation.

Environmental quality, to self-proclaimed conservationists like Senator Jackson, remains a luxury. Environmental questions are seen as "a matter of life styles," rather than a matter of survival.

We proclaim our concern for environmental purity, as long as it does not cost us more than a few dollars, or infringe on our "rights." Thus do well-off people justify their "right" to produce large families, though it is increasingly clear that the world already is wallowing in an excess of humanity. Large, well-to-do families, in fact, place a greater burden than poor families do on our diminishing space and resources because they can afford more of both.

But the feeling remains that half-way measures will do. Government and industry officials brand all calls for anything more forceful as "emotional" and "hysterical." The chemical industry continues its notorious campaign to persuade us that any change in its self-defeating pest control practice must leave us open to "famines and epidemics."

While I don't agree that all is well, I am not among those who see Armageddon looming around the corner. I think that people who foresee some sort of global killer smog—a great cleansing disaster—are essentially optimists, for survivors, whether people or simply warm little blobs on a mudbank, could dip themselves out of the rubble and begin building a brighter, cleaner world.

In the light of our less-than-total commitment, I see a different sort of catastrophe. I see our planet disintegrating not with a bang but a whimper. I see blight spreading like a stain, progress at any cost destroying the marvelous diversity of our world.

I think that in the future we will suffer more and more "minor inconveniences"—the loss of a species here, the destruction of a river or beach or forest there, just one more layer of smog, a few more sonic booms. Each of us, even our children, already can supply examples from our own experience. It will be gradual, but in the end we will have destroyed all that makes life worth living, and there will be very little satisfaction in saying, "We told you so."

MR. JOSEPH HEIZER
1516 Masonic Ave.
San Francisco, Calif. 94117

Re. Neighborhood that has "gone to the dogs"—
BARKING dogs, that is.

Although it was pleasant talking to you today about the noise problem in our otherwise quiet neighborhood I must preface my remarks with a criticism of the federal government. In brief, I do not really endorse the intervention of the federal govt. in the matter of barking dogs. I believe it should be regulated by a local law, enforceable by local police.

Unless the local, city government has completely broken down in its enforcement of the simple amenities of city living why should an outside agency even be concerned?

If the local government has, in fact, broken down in its primary duty to its tax-paying residents: the protection of their lives and property—it must be due to wrong priorities forced upon it by federal programs such as Welfare-ism which compels the drain of money from proper and primary functions to feed, clothe and entertain an army of parasites who pollute the city, drain its resources and give nothing but trouble in return. It seems to me the courts and the Congress have designated the cities as the bags into which are dumped the floating problems of the nation. I, like so many others, hope to escape soon.

Then, of course, the federals must come in to remedy the problems they have created.

Hence I could not, with any enthusiasm, approve of more taxes to abate a nuisance that should be regulated by a simple law—made locally, and enforceable by local police. If money is needed priorities should be reordered. Ie., money should first be spent on the well-being of the people who pay the bulk of the taxes already and what is left can be spent on the parasites and other social experiments by the federal government. The federal govt. has overturned time-honored priorities and then forces its way in to remedy the situation. This is madness.

Incidentally, these outdoor barkers are obviously not house dogs. They are not "pets" as Assemblyman Brown asserts. They are for protection against the criminal element prowling the streets day and night looking for houses to break into. (Mr. Brown's house was stripped of its furniture thus some time back.) If the Feds would leave enough money for local government many evils would be solved.

I appreciate your desire for security in the use of dogs around your home—and realize you are probably unaware of their daily and unprovoked barking which renders them useless as watchdogs but pretty unbearable neighbors in the "echo chamber" which is our backyard compound.

In finally searching out the source of the noise after another morning of discomfort I stopped at the homes of several neighbors who shared my disbelief that you would knowingly permit such disturbance in an otherwise quiet area.

I rang the bell at your home around noon but no one answered hence this note. I trust you will appreciate knowing the general feeling.

With personal best wishes.

Please accept my apology for the trouble my pets have caused you and the other Masonic Street dwellers. I shall immediately see to it that my pets cease to be an annoyance to my neighbors.

I appreciate your calling this matter to my attention as my attendance in Sacramento prevents me from being in San Francisco except on weekends. Without your letter, I would have been unaware of my pets' conduct.

Note: Despite this courteous reply of the public official, it was "all primose—no performance", as on most levels of government. Nothing changed.

W. C. REYNOLDS
Stanford University
Stanford, Calif. 94305

Enclosed please find two submissions of testimony for the public hearing on Noise Pollution, September 27-29.

I waive oral presentation of this testimony, but plan to attend the hearings on Tuesday, September 28, and can discuss these ideas with the panel at that time if they so desire.

FREEWAY NOISE AND SOCIAL COSTS

Summary

Social costs play an important role in noise pollution problems, and must be understood and dealt with for effective solutions. Where there is noise there is damage; those damaged are not properly compensated, and thus the noisemaker does not pay its true cost. The noisemaker would have been designed differently if payment of its social costs had been mandatory; hence, a global social cost approach would contribute significantly to the solution of many noise pollution problems. Freeway noise is a case in point.

Testimony

"It is much more important for clear thinking about the pollution problem to understand a few economic concepts than to learn a lot of sensational sounding numbers".[1]

It is my understanding that this testimony will assist the Environmental Protection Agency in defining the means by which it will carry out its mission. The hearing panel on noise has good representation from the technological and legal points of view, but is thin (and perhaps void) of expert representation in an area essential to successful noise control—economics. This oversight, or lack of insight, has prompted me to prepare this testimony in the hopes of contributing significantly to the goals of the hearing. As an engineer, and not an economist, I shall seek simply to point out the importance of certain economic concepts as they directly apply to noise control and the inter-play of these ideas with technology. None of these ideas are new. Some ideas expressed here are included in the recent Department of Commerce report on the noise problem.[2] A basic treatment of the relationships of social costs and pollution[1] should be mandatory reading for EPA planners. Detailed applications of these ideas to airport noise have been developed by one of my colleague.[3, 4]

There are four main points that I wish to make:

(1) Where there is noise there is damage
(2) Those damaged are not properly compensated, and thus the noise maker does not pay its true cost
(3) The noisemaker would have been designed differently if payment of its social costs had been mandatory
(4) A global social-cost approach would contribute significantly to the solution of many noise polution problems.

These ideas will be illustrated for the special case of freeway noise, in which my own interest and technical background is concentrated.

1. *Where there is noise there is damage*

This goes almost without saying, although in most cases the damage cannot be fully assessed with our present knowledge. Freeway noise is severe enough to cause permanent hearing loss only very close to the roadway, for the average individual;[5] but humans differ widely, and in fact there may be significant hearing damage to some (perhaps a good number) persons living in freeway noise over a long period of time. There are most certainly temporary threshold shifts in most persons subjected to continuous freeway noise at levels of 70 dB(A), although presently this is not well documented. There are other physiological effects of noise about which more needs to be known; for example, noise is believed to be an important factor in stress-induced cardiovascular problems.[5] It seems clear that persons impacted by freeway noise are damaged physiologically, and that such damage could (and should) be documented by appropriate research.

There is direct evidence that freeways reduce property values in areas affected by noise; in addition, the time required to sell a home affected by freeway noise is considerably longer than normal, and this delay is an added cost to the seller.[6] While the effects are most certainly regional and perhaps even local, research data on property value loss associated with freeway noise should be useable as a basis for determination of the cost of the freeway to the landowner, and, if he is able to secure a tax reduction, of the cost to the community in terms of a tax base reduction.

In addition to physiological damage and property value loss, there are other damages that may be more difficult to assess. What is the cost to a community when its nature is changed by intrusion of first light and then heavy industry to areas made undesirable for residential purposes? What is the cost associated with the reduction in green-space? These too, are interesting topics for research.

2. *Those damaged are not properly compensated, and therefore the noisemaker does not pay its true cost*

Freeway costs are presently figured on the basis of site acquisition and construction. Compensation is seldom (if ever) given to the occupant or landowner damaged by the freeway noise, or to the community to which the freeway is a liability and not an asset (e.g. Los Altos Hills, along Interstate 280). Property owners are not generally able to obtain reductions in assessed valuation; tenants are not able to obtain rent reductions; homes cost more to sell, and are worth less, and these costs are not recovered. The noise-induced stress goes uncompensated. Much of the true cost of the freeway is in fact born by the society upon which it impacts; for this reason economists call such costs *social costs,* as distinct from the *private costs,* which are actually paid for the freeway.

3. *The noisemaker would have been designed differently if payment of its social costs had been mandatory*

Cost is a major factor in the optimismation of freeway designs. The fact that the private cost is only a portion of the total cost means that the optimum design will have noise levels that are out of line with its actual cost. If instead the freeway paid its total cost, the optimum design would certainly be more acceptable from the noise point of view; the cheapest design would involve considerable noise control.

Suppose that payment for at least some social costs were made mandatory, perhaps along the following lines. The design would have to be accompanied by a *social cost report,* which would include a detailed acoustical calculation for the final design. This calculation would consider reflections, adsorptions, diffractions of the local topograph, refractions under a variety of typical atmospheric conditions (including the focusing effects of wind shear and temperature profile), and would provide an estimate of the increased noise level (dB(A)) along contours in the community. Then, upon completion of the freeway each landowner would be compensated according a formula, and his assessed valuation would be accordingly reduced. The local governments would be compensated for the tax base reduction (perhaps on some declining basis over a period of several years) according to appropriate formulas. (Landlords requiring such compensation would be required to give immediate rent reductions). Possibly other social costs could also be included, all to be forecast and born by "the freeway". Given this new approach to freeway costing, it is quite likely that sound barriers (which are now "impossible—too expensive") would become economical; freeways would be sunken, perhaps even underground. Quieter freeways would indeed be a result of even a partial payment of social costs.

4. *A global social cost approach would contribute significantly to the solution of many noise control problems*

Just as it is unfair to expect a community to bear part of the cost of a freeway that uses and enloudens its space, so is it unfair to make the operator of a quiet vehicle pay for the truckers' noise. And, one should not encourage quiet vehicles, such as electrics, without considering the impact on the environment of generating stations and transmission gear for production and distribution of the needed power. A global approach is clearly needed, what the engineer calls a "systems view". Suppose that automobile license fees were based not upon the value of the automobile but instead upon the impact that the vehicle makes upon the environment. Noisy, smelly vehicles (within established limits!) pay high fees, while clean, quiet vehicles pay lesser fees. To put things on a mileage basis, odometers might be sealed, and the fees based upon readings of mileage, pollution, and noise tests taken at an annual inspection. This sort of control would provide strong incentive for manufacturers to produce cleaner, quieter vehicles, and for operators to buy them.

What should the EPA do to develop a proper global approach to environmental quality control? The EPA should initiate research needed for adequate evaluation of social costs, support engineering experiments on quieter designs and basic research aimed at understanding *why* vehicles are noisy (and not just how much noise they make), and studies of appropriate economic institutions for environmental control. The depth and breadth of talent in engineering, audiology, sociology, economics, law, anthropology, etc., that is needed for a proper systems approach may well be found only in major universities, and the EPA should look to these institutions for such strength.

At Stanford, a Sound and Noise program will get under way this year and will include a two-quarter noise pollution workshop devoted to solution of noise problems. In a workshop now under consideration, social-cost recovery formula would be developed and applied in a hypothetical redesign of a segment of Interstate 280. This effort will represent a substantive expansion of the ideas suggested above. Similar activities could be stimulated at other universities, which will soon look to EPA as a major funding source.

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3. Baxter, W. F. 1968, The SST; *From Watts to Harlem in Two Hours*, Stanford Law Review, *21*, 1
4. Altree, L. R. and Baxter, W. F., 1968 *Legal Aspects of Airport Noise and Sonic Boom*, AD 682 900
5. Kryter, K. D. 1970 *The Effects of Noise on Man*, Academic Press
6. Miller, et al. 1970 *A Summary Report of Action 1968-1969 by the Los Altos Hills Noise Abatement Committee*

Summary and testimony

In the rush to solve environmental noise problems, EPA should support not only research on *how much* noise things make (e.g. automobiles and trains), but also *why* they make noise. The basic mechanics of noise generation must be understood for effective reduction of noise at its source, the best place to provide the control.

More data on *how noisy* freeways are will do little to help design quieter trucks and cars. We need first to understand *why* tires, fans, and fenders make noise, and *then* we can engineer quieter vehicles.

ANTOINETTE RILEY
161 Oak Ave. #3
Redwood City, Calif. 94061

I live in Redwood City and work, so I can not attend your meeting or call, but I wish to voice a *loud* complaint. In my opinion the very worst noise polluters are the motor bikes and small foreign cars. I have been told by men that know that it is not necessary for them to be so noisey. In fact, they alter their vehicles to make them noiser. A few stiff fines might slow them down a bit. Believe me, El Camino is much noiser than Bayshore —I use both frequently.

A few weeks back the San Francisco Chronicle had an article in the Sunday paper written by a man who had gone on one of the Sunday trips with a bunch of the week-end idiot groups that tear up and pollute the quiet country side. Because these miserable little things can go anywhere, it is no longer possible to find a peaceful rural area to relax. They go everywhere and are getting worse all the time. I'll take the steady rumble of a plane overhead anytime to the earsplitting noise that those pesky things make. And they are on the go at all hours of the day and night.

Can't something be done to control this unnecessary noise?

DAVID PARKER

Plane noise over Barron Park, Los Altos and South Palo Alto, CA. is so bad that it is almost sickening. Why are the small planes from the Municipal Field at Palo Alto allowed to fly so low and make so much noise? And why have they put all of these big screaming jets in over here, too. It's really the limit! Who ever is responsible for all of this should be relieved of their job and sentenced to spend the rest of their days listening to this, as we seem destined to do.

MRS. DENNIS C. DRAKE
55 Bret Harte Road
San Rafael, Calif. 94901

An article today in the San Francisco Chronicle about your project, collecting noise data has prompted this letter. I did not know of your summer "noise complaint" telephone or I would surely have called you.

My complaint is freeway noise in supposedly quiet, suburban Marin County. When we bought our home in 1968, this noise was of no consequence, and three years later, has grown to such volume it is making me very nervous and irritable. We can't sleep with the windows open. Hundreds of neighbors share this complaint. Our home is not isolated.

We've planted trees, shrubs, urged the planting of trees along the freeways, anything to block the noise. We supported Proposition 18 which would have encouraged mass transit and a trend away from single passenger cars clogging the freeways.

My observations on freeway noise, in case they may be of factual interest, are:

1) Noise does NOT decrease as it rises. Our home is high in the hills and blocks away from the freeway, yet it is quieter down lower and closer to the freeway.

2) Trucks, motorcycles and traffic-watching helicopters are by far the worst offenders.

3) One does not "get used" to the noise. You become sensitized to it instead.

4) Appeals to local government and state highway departments are frustrating and useless. They have no constructive answers and don't appear to be looking for them. In fact I was told by the state highway engineer that they couldn't possibly landscape for noise abatement—they were planning to *ADD* two more lanes to 101 in the area where I live.

Thanks for doing your research. Don't underestimate its worth. A lot of people are going slowly mad because noice control is an enormous problem being virtually neglected by those in position to do something about it.

Personally, I support the idea of using the air-space above freeways to build needed housing, office space, parking lots, even mini-parks, tennis courts,—all those things so in demand by people today. An enclosed freeway is a quiet freeway.

JOSEPH E. CORNISH
110 Nimitz Ave.
Redwood City, Calif.

I realize the article in the paper stated if anyone has a problem about noise etc. to phone a given number. My job tomorrow will not permit me to phone so I'm hoping a letter will serve my purpose. Please find time to give it a little attention.

My problem is noise pollution. We have lived at this address for 23 years. At the time we bought our home it was beautiful country; a quiet clean, fresh place to raise a family. As years went by and progress took over, all this began to deminish. Just recently, the State decided to build a Freeway 2 doors from our home. All I can say is, our area has become a living Hell—Day and Night. What's even worse is our street is much narrower than the average residential street so the County made it a one-way because of the flow off the Freeway. This unintentionally made it a Show off strip for speeders, even though the limit is 25 miles per. The speeding is bad enough but throw in loud exhaust pipes with it and you have a nerve shattering experience. Also at the inter-section of our street and the Freeway, Traffic signals have been installed. Believe me, it sounds like the Battle of Normandy, especially at night when sport cars and motorcycles are waiting for the signal to change (their take off is something else!!!!)

Next to us, on the Freeway side, an 18 unit Studio Apt. was built. That part is fine but their parking area is next to our bedrooms and living room. It seems that each tenant has a small car or pick-up truck with loud Smittys or Pipes. We never know when or what time to expect a loud blast. Call the Sheriff??? Most often they know each other. It's disheartening as HELL to know the value of something we've worked for is slowly going down all because of loud, unnecessary noise. Who can people like me, and I know there are plenty, turn to and expect a possible solution? We can't rely on our Police or County Gov't. It appears that everyones hands are tied or their is some Legal blockage or those who might help are afraid to stick their necks out for political reasons. All this noise and peace disturbances is pretty much over-looked by our Police force here in Redwood City, but let my Dog bark over 5 min. and a Sheriff is out "doing his duty".

Can any thing be done to make it illegal to have any of these noise making contraptions attached to an auto or motorcycle? Judging by the fumes and smoke they let us, it certainly doesn't help our Air-Pollution problem. I think they are also an encouraging factor to speed problems. We all know that with one of these, the faster you drive the louder the noise.

One thing I cannot comprehend is—"the Law is this—the Law is that". Most laws actually protect the offender because they were drawn up Centuries ago. On the other hand, people like to refer to the saying of "we must keep up with progress" which is fine and dandy but why aren't our Pensioned laws dusted off and revised a little to "keep up with progress?"

People have complained about Jet Airline noise so the Airlines are rerouting their air patterns to comply. I think our biggest noise problem is right here on our streets and highways.

I hope I have explained my problem and if a little attention can be given it, I would appreciate it very much and I'm certain thousands of others would offer you their thanks. Please keep my name in mind if at any time I can be of assistance in fighting NOISE POLLUTION.

JOHN L. BURTON
Member of Assembly, Twentieth District
350 McAllister St.
San Francisco, Calif. 94102

Thank you very much for inquiring about Senate Bill 490. This bill has passed the Senate, and it now is before the Assembly Judiciary Committee for action.

I am enclosing a copy of the bill and its amendments for you. The key parts, from your standpoint, are contained in Line 6, Page 1, of the original bill—wherein "noise" is specifically defined as a "nuisance". Then, on Page 2, Lines 13-15 of the June 2nd amendment, "noise pollution" is defined as, among other things, disturbing to a *reasonable* man. Finally, on Page 2, lines 32-40 of the July 13 amendment, the bill contains authority for an individual to sue to prevent such nuisances as noise pollution.

This is a Civil Code bill, and it is intended to instruct the courts, and to make it clear that noise pollution is a legitimate ground for a suit.

I might add that there are other bills moving through the Legislature which would put specific limits on such noise-producing things as trucks, cars and trailbikes. The Transportation Committee has been active in this field.

I believe you can rest assured that SB 490 will be a useful legal tool in combating excessive noise if it finally is signed into law.

AMENDED IN SENATE JULY 13, 1971
AMENDED IN SENATE JULY 2, 1971
AMENDED IN SENATE JUNE 2, 1971

SENATE BILL No. 490

Introduced by Senators Moscone, Behr, Marks,
Nejedly, Petris and Rodda
March 8, 1971

REFERRED TO COMMITTEE ON JUDICIARY

An act to amend Sections 3479 and 3493 of, and to add Section 3485 to, the Civil Code, relating to Nuisance.

LEGISLATIVE COUNSEL'S DIGEST

SB 490, as amended, Moscone (Jud.) Nuisance

Amends Secs. 3479, 3493, adds Sec. 3485, Civ.C.

Expands definition of nuisance to include anything potentially injurious to health, or which constitutes air, water, or noise pollution, as defined. Specifies that "health" includes health of human beings, livestock, wild animals, birds, or fish or other aquatic life.

Declares that violation of statute, regulation, order, or ordinance governing activities which affect quality of the environment is presumed to constitute nuisance and that compliance therewith constitutes a defense in an action for public nuisance.

Permits private person to maintain action for public nuisance if, in addition to nuisance being specially injurious to himself, it affects quality of the environment or obstructs public rights of passage. Permits prevailing party to recover costs and reasonable attorney's fees in such action.

Vote—Majority; Appropriation—No; Fiscal Committee—No.

The people of the State of California do enact as follows.

SECTION 1. Section 3479 of the Civil Code is read:

3479. (a) Anything which is injurious or potentially injurious to health of human beings, livestock, wild animals, birds, or fish or other aquatic life or is indecent or offensive to the senses, or constitutes air, water, or noise pollution as defined in subdivisions (b), (c) and (d), or is an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property, or which unlawfully obstructs the free passage or use, in the customary manner, of any navigable lake, or river, bay, stream, canal, or basin, or any public park, square, street, or highway, is a nuisance.

(b) As used in the section, "air pollution" means the presence in the outdoor atmosphere of particulate matter, dust, fumes, gas, smoke, or vapor, or any combination thereof, in sufficient quantities and of such characteristics and duration as (1) to be injurious to human, plant, or animal life, or to property, or offensive to the senses, or (2) which unreasonably interferes with the comfortable enjoyment of life or property.

(c) As used in this section, "noise pollution" means any noise which is injurious to public health, safety, or welfare, or which is disturbing to a reasonable man.

(d) As used in this section, "water pollution" means such alteration of the physical, chemical, or biological properties of any waters of the state, or such discharge of any liquid, gaseous or solid substance into any waters of the state as will, or is likely to, render such waters injurious to public health, safety, or welfare, to domestic, agricultural, recreational, or other legitimate uses, or to livestock, wild animals, birds, or fish or other aquatic life.

SECTION 2. Section 3485 is added to the Civil Code, to read:

3485. The violation of any statute or of any regulation, order, or ordinance governing activities which affect the quality of the environment, adopted by any agency or political subdivision of this state, is presumed to constitute a nuisance as defined in Section 3479. The presumption created by this section shall be a presumption affecting the burden of proof.

Compliance with any such statute, regulation, order, or ordinance constitutes a defense in an action for public nuisance.

SECTION 3. Section 3493 of the Civil Code is amended to read:

3493, Notwithstanding any other provision of law, a private person may maintain an action for a public nuisance, if it is specially injurious to himself, if it affects the quality of the environment, or if it obstructs public rights of passage, but not otherwise. The prevailing party in such action shall be entitled to recover costs of suit and reasonable attorney's fees.

GEORGE R. MOSCONE
State Senator
540 Van Ness Ave., Rm 209
San Francisco, Calif. 94102

I appreciate your letter of August 18, 1971, regarding the critical matter of noise pollution.

As author of Senate Bill 490, I have attempted to redefine noise pollution as a matter injurious to health and subject to the same laws which apply to any similar nuisance. This measure, coupled with several other measures restricting the level of automotive noise emissions, should go a long way toward curbing the excesses now painfully obvious. I trust we will be successful.

Thank you for taking the time to correspond with me on this most critical problem.

CHARLES R. FOSTER, Director
Office of Noise Abatement, DOT
Washington, D.C. 20590

This is in response to your letter of August 19, 1971, to President Richard Nixon concerning motor vehicle noise.

We in the Department of Transportation are well aware of the noise problems on our highways and streets and are actively pursuing solutions of both a technical and legal nature. However, we believe that strengthening of existing state and local statutes is more effective in reducing noise from motor vehicles than the development of Federal legislation. The key to motor vehicle noise reduction is enforcement of prescribed noise level standards.

Most states have within their present motor vehicle legislation codes the provision that vehicle mufflers be in good condition. Only New York and California, however, have enacted legislation with numerical limits against which enforcement can be taken under specified procedures. Enclosed is a copy of the proposed DOT Highway Noise Standards which may be of interest. We believe each state has the prerogative to establish similar enforceable vehicular noise codes and to enforce these codes for the benefit of its citizens.

We in the Department are fully determined to work on a technological front to develop means to permit compliance with progressively more stringent state regulations and to establish information channels between the vehicle manufacturers, highway planners, and state highway patrol officials. However, the ultimate success of quieter communities still resides with the people—whether or not they are able to convince state and local officials to undertake effective enforcement of reasonable standards for motor vehicle noise abatement on our highways.

If we may be of further assistance, please let us know.

PROPOSED DOT HIGHWAY NOISE STANDARDS

PART II. MODEL ADDITIONS FOR STATE MOTOR VEHICLE CODE

Section 1.

(a) No person shall operate either a motor vehicle or combination of vehicles of a type subject to registration at any time or under any condition of grade, load, acceleration or deceleration in such a manner as to exceed the following noise limit for the category of motor vehicle based on a distance of 50 feet from the center of the lane of travel within the speed limits specified in this section:

	Speed limit of 35 mph or less	Speed limit of more than 35 mph
(1) Any motor vehicle with a manufacturer's gross vehicle weight rating of 6,000 pounds or more, any combination of vehicles towed by such motor vehicle.	86 dB(A)	88 dB(A)
(2) Any motorcycle other than a motor driven cycle.	82 dB(A)	86 dB(A)
(3) Any other motor vehicle and any combination of vehicles towed by such motor vehicles	76 dB(A)	82 dB(A)

(b) The (state highway patrol/police, etc.) department shall adopt regulations establishing the test procedures and instrumentation to be utilized.

(c) This section applies to the total noise from a vehicle or combination of vehicles and shall not be construed as limiting or precluding the enforcement of any other provisions of this code relating to motor vehicle exhaust noise.

(d) For the purpose of this section, a motor truck, truck tractor, or bus that is not equipped with an identification plate or marking bearing the manufacturer's name and manufacturer's gross vehicle weight rating shall be considered as having a manufacturer's gross vehicle weight rating of 6,000 pounds or more if the unladen weight is more than 5,000 pounds.

(e) No person shall have a cause of action relating to the provisions of this section against a manufacturer of a vehicle or a component part thereof on a theory based upon breach of express or implied warranty unless it is alleged and proved that such manufacturer did not comply with noise limit standards of the Vehicle Code applicable to manufacturers and in effect at the time such vehicle or component part was first sold for purposes other than resale.

Section 2. No vehicle shall be equipped with, nor shall any person use upon a vehicle any siren, except that an authorized emergency vehicle shall be equipped with a siren or a type approved by the (state highway patrol/police/etc.) department.

Section 3. Every motor vehicle subject to registration shall at all times be equipped with an adequate muffler in constant operation and properly maintained to prevent any excessive or unusual noise, and no muffler or exhaust system shall be equipped with a cutout, or similar devices.

Section 4. No person shall modify the exhaust system of a motor vehicle in a manner which will amplify or increase the noise emitted by the motor of such vehicle, above that emitted by the muffler originally installed on the vehicle and the original muffler shall comply with all of the requirements of this chapter.

Section 5.

(a) No person shall sell or offer for sale a new motor vehicle which produces a maximum noise exceeding the following noise limit at a distance of 50 feet from the centerline of travel under test procedures established by the (state highway patrol/police etc.) department:

(1) Any motorcycle, other than a motor-driven cycle, manufactured on or after January 1, 1973 .... 86 dB(A)

(2) Any motor vehicle with a gross vehicle weight rating of 6,000 pounds or more manufactured on after January 1, 1973 .... 86 dB(A)

(3) Any other motor vehicle manufactured after January 1, 1973 .... 84 dB(A)

(b) Test procedures for compliance with this section shall be established by the (state highway patrol/police/etc.) department.

PART III. MODEL ADMINISTRATIVE CODE FOR IMPLEMENTATION OF MODEL MOTOR VEHICLE CODE SECTIONS 1 AND 5.

I. *Scope of Regulations.* This article contains procedures implementing Section 1 of the Vehicle Code which applies to the measurement of noise from motor vehicles and combinations of vehicles subject to registration when operated on a highway, and Section 5 of the Vehicle Code which applies to the measurement of noise from new motor vehicles offered for sale.

II. *Definitions.* The following definitions shall apply wherever the terms are used in this article.

(a) *Low Gear.* The "low gear" is the highest numerical gear ratio of the transmission which is commonly referred to as low gear.

(b) *Maximum Rated RPM.* The "maximum rated rpm" is the maximum governed engine speed or the rpm at maximum engine horsepower as established by the engine manufacturer.

(c) *Vehicle Reference Point.* The "vehicle reference point" is the location on the vehicle used to determine when the vehicle is at any of the points on the vehicle path. The vehicle reference point shall be the driver's position except when the exhaust outlet is more than 16 feet from the driver's position on these vehicles, both the driver's position and the exhaust outlet shall be used as reference points.

III. *Personnel.* Persons selected to conduct noise measurement testing or to measure noise level of vehicles operated on a highway shall have been trained and qualified in the techniques of sound measurement and the operation of sound measuring instruments.

IV. *Instrumentation.* Equipment used in making vehicle noise measurements shall be selected by technically trained personnel and shall meet the following requirements.

(a) *Sound Level Meter.* The sound level meter shall meet the requirements of ANSI Standard S1.4-1961, except that the B and C weighting networks need not be incorporated in the instrument.

(b) *Sound Level Calibrator.* The sound level calibrator shall be the auxiliary closed-coupler calibrator specified in ANSI Standard S1.4-1961.

(c) *Tachometer.* A tachometer shall be used to determine when maximum rated rpm is attained in conducting the tests specified in Section VII of this code.

(d) *Anemometer.* An anemometer shall be used to measure the wind speed at the test site when conducting tests specified in Section VII of this code.

V. *Noise Measuring Sites.* Noise measuring sites shall meet the following requirements.

(a) *Measuring Site for Vehicles on the Highway.* The site used in measuring noise from vehicles on the highway under Section 1 of the Vehicle Code shall meet the following conditions:

(1) *Location.* The location shall be open and free of large reflecting surfaces such as parked vehicles, signboards, buildings, bridges, or hillsides within either of the following areas: (Figure 1)

(A) A 50-ft. radius of the microphone and within a 100-ft. radius of the point on the centerline of the path of the vehicle nearest the microphone; or

(B) A 100-ft. radius of the microphone and within a 50-ft. radius of centerline of the path of the vehicle nearest the microphone.

(2) *Ground Condition.* The surface of the ground between the microphone and the path of the vehicle shall be free of any vegation more than 3 inches in height.

(3) *Roadway Surface.* The surface over which the vehicle travels shall be dry and relatively smooth concrete or asphalt pavement.

(b) *Measuring Site for New Motor Vehicles.* The site used in measuring noise from new motor vehicles under Section 5 of the Vehicle Code shall meet the following conditions:

(1) *Location.* The location shall be a flat open space free of large reflecting surfaces such as signboards, buildings, hillsides, or trees within 100 ft. of the microphone and within 100 ft. of the centerline of the path of the vehicle from the point where the throttle is opened to the point where the throttle is closed.

(2) *Ground Condition.* The surface between the microphone and the path of the vehicle shall be asphalt or concrete free of powdery snow, loose soil, or ashes. (NOTE: Unused parking lots meet such requirements).

(3) *Roadway Surface.* The surface over which the vehicle travels shall be dry and relatively smooth concrete or asphalt pavement free of extraneous material.

VI. *Microphone and Technician.* The microphone and technician shall be positioned as follows.

(a) *Microphone Location.* The microphone shall be located 50 ± 1 ft. from the centerline of the lane of travel of the vehicle at a height of 4 ± ½ ft. above the plane of the roadway surface.

(b) *Microphone Orientation.* The microphone shall be oriented relative to the source of the sound in accordance with the instrument manufacturer's instructions. Where the instruction manual is vague or does not include adequate information, a specific recommendation shall be obtained from the manufacturer.

(c) *Technician Location.* The technician making direct readings of the meter shall be positioned relative to the microphone in accordance with the instrument manufacturer's instructions. Where the instruction manual is vague or does not include adequate information, a specific recommendation shall be obtained from the manufacturer.

(d) *Bystander Location.* During the test bystanders shall stay at least 50 ft. from the microphone and the vehicle being tested, except for a witness or trainee who may be positioned beyond the technician on a line through the technician and the microphone.

VII. *Operation of New Motor Vehicles.* New motor vehicles tested for compliance with Section 5 of the Vehicle Code, together with any auxiliary equipment that would be in use while the vehicle is in motion on the highway, shall be operated as follows.

(a) *Trucks, Truck Tractors, and Buses.* Vehicles with a manufacturer's gross vehicle weight rating of 6,000 lbs. or more shall be tested at a speed up to 35 mph and operated as follows:

(1) *Test Area Layout.* The test area shall include a vehicle path of sufficient length for safe acceleration, deceleration, and stopping of the vehicle. The following points and zones shall be established on the vehicle path: (Figure 2)

(A) Microphone point—the location on the centerline of the vehicle path that is closest to the microphone.

(B) Acceleration point—a location 50 ft. before the microphone point.

(C) End point—a location 50 ft. beyond the microphone point.

(D) End zone—the last 40 ft. distance between the microphone point and the end point.

(2) *Gear Selection.* A gear shall be selected which will result in the vehicle beginning at an approach rpm of no more than ⅔ of maximum rated rpm at the acceleration point and reach

maximum rated rpm within the end zone without exceeding 35 mph.

(A) When the maximum rated rpm is attained before reaching the end zone in any usable gear, the approach rpm shall be decreased in 100 rpm increments until maximum rated rpm is attained within the end zone.

(B) When maximum rated rpm is not attained until beyond the end zone, the next lower gear shall be selected until maximum rated rpm is attained within the end zone.

(C) When the lowest gear still results in reaching maximum rated rpm beyond the end zone, the approach rpm shall be increased in 100 rpm increments until the maximum rpm is reached within the end zone.

(3) *Acceleration.* The vehicle shall proceed along the vehicle path maintaining the engine speed in the gear selected for at least 50 ft. prior to the acceleration point. When the vehicle reference point is at the acceleration point, the throttle shall be rapidly and fully opened and maintained until maximum rated rpm is attained which must be within the end zone. (Tractor trucks may be operated with any type of trailer or "bob tail." Most heavy trucks and all trucks with engine brakes must be tested in accordance with procedure VII(e).

(4) *Engine Temperature.* The engine temperature shall be within normal operating range throughout each run.

(b) *Light Trucks, Truck Tractors, Buses and Passenger Cars.* Trucks, truck tractors, buses and passenger cars that have a gross vehicle weight rating of less than 6,000 lbs. shall be operated as follows:

(1) *Test Area Layout.* The test area shall include a vehicle path of sufficient length for safe acceleration, deceleration, and stopping of the vehicle. The following points and zones shall be established on the vehicle path: (Figure 3)

(A) Microphone Point, the location on the centerline of the vehicle path that is closest to the microphone.

(A) Acceleration point, a location 25 ft. before the microphone point.

(C) End point, a location 100 ft. beyond the microphone point.

(D) End zone, the last 75 ft. distance between the microphone point and the end point.

(2) *Gear Selection.* Motor vehicles equipped with three- or four-speed manual transmissions shall be operated in low gear. Vehicles equipped with four-speed manual transmissions shall also be operated in second gear. Vehicles equipped with five-speed manual transmissions shall be operated in second gear. Vehicles equipped with automatic transmissions shall be operated with transmissions engaged in low gear. Vehicles which reach maximum rated rpm at less than 30 mph or before reaching the end zone shall be operated in the next higher gear. Auxiliary step-up ratios (overdrive) shall not be engaged on vehicles so equipped.

(3) *Acceleration.* The vehicle shall proceed along the test path at a constant approach speed of 30 mph. When the vehicle reference point is at the acceleration point, the throttle shall be rapidly and fully opened until the rear of the vehicle reaches the

end point, or until the maximum rated rpm is reached, at which point the throttle shall be gradually closed. Wheel slip shall be avoided during this test.

(4) *Engine Temperature.* The engine temperature shall be within normal operating range throughout each run. The engine shall be idled in neutral for at least one minute between runs.

(c) *Motorcycles.* Motorcycles shall be operated as follows;

(1) *Test Area Layout.* The test area shall include a vehicle path of sufficient length for safe acceleration, deceleration, and stopping of the vehicle. The following points and zones shall be established on the vehicle path: (Figure 4).

(A) Microphone point, the location on the centerline of the vehicle path that is closest to the microphone.

(B) Acceleration point, a location established for each vehicle by the following procedure so that during acceleration the vehicle will be in the end zone when maximum rated rpm is attained:

Approach the end point in low gear from the reverse direction at a constant ⅔ maximum rated rpm. At the end point fully open the throttle and accelerate past the microphone point under full acceleration. By trial select the lowest transmission gear that will result in the vehicle traveling the shortest distance from the end point to the place where rated rpm is reached, but not less than 50 ft. The location on the vehicle path with respect to the vehicle reference point when maximum rated rpm is attained is the acceleration point.

(C) End point, a location 25 ft. beyond the microphone point.

(D) End zone, the last 10 foot distance between the microphone point and the end point.

(2) *Acceleration.* The vehicle shall proceed along the vehicle path at a constant approach speed in the gear selected in paragraph (B) at ⅔ maximum rated rpm. When the vehicle reference point is at the acceleration point, the throttle shall be rapidly and fully opened. Full throttle acceleration shall continue until maximum rated rpm is reached, which shall be within the end zone as near as practical to the end point. When maximum rated rpm is reached, the throttle shall be closed. Wheel slip which affects maximum sound level shall be avoided and the manufacturer's safe maximum rpm shall not be exceeded.

(3) *Engine Temperature.* The engine temperature shall be within normal operating range prior to each run.

(e) *Deceleration.* Deceleration runs are to be conducted when deceleration noise appears excessive. The vehicle shall approach the end point from the reverse direction at maximum rated rpm in the gear selected for the acceleration runs. At the end point, the throttle shall be closed and the vehicle shall be allowed to decelerate to one-half of maximum rated rpm. (For trucks equipped with an engine (or exhaust) brake the deceleration test shall be repeated with full brake application immediately following closure of the throttle).

VIII. *Meter Operation.* The sound level meter shall be operated in accordance with the instrument manufacturer's instructions and as follows:

(a) *Meter Setting.* The A-weighting network and the fast meter response shall be used.

(b) *Calibration Check.* An external calibration check shall be made before and after each period of use and at intervals not exceeding two hours when the instrument is in use longer than this time.

(c) *Meter Reading.* The reading recorded shall be the highest sound level obtained as the vehicle passes by, disregarding unrelated peaks due to extraneous ambient noises.

(d) *Ambient Sound.* Measurements shall be made only when the A-weighted ambient sound level, including wind effects, due to all sources other than the vehicle being measured is at least 10 dB(A) lower than the sound level of the vehicle.

(e) *Wind.* Measurements shall be made only when the wind velocity is less than 12 miles per hour.

IX. *Vehicle Noise Level.* The measured noise level of a vehicle shall be reported as follows:

(a) *Noise Level for Vehicle on the Highway.* The sound level reading for determining compliance with Section 1 of the Vehicle Code shall be the highest reading obtained as the vehicle or combination of vehicles passes through the measuring site on the highway. Sound level readings shall be recorded on vehicles which are in lanes of travel with centerlines at or beyond 50 feet and which produce noise levels exceeding the statutory limits.

(b) *Noise Level for New Motor Vehicles.* The sound level readings for determining compliance of new motor vehicle with Section 5 of the Vehicle Code shall be obtained by making at least four measurements for each side of the vehicle. At least two runs in each direction shall be performed with each reference point when the exhaust outlet is more than 16 ft. from the driver's position. Sufficient preliminary runs shall be made to familiarize the driver with the operation of the vehicle and to stabilize the engine operating condition. The A-weighted sound level for each side shall be the average of the two highest readings on that side which are within 2 dB(A) of each other. The noise level reported for the vehicle shall be the sound level of the loudest side of the vehicle. Obvious vehicle malfunction shall nullify the test.

(c) *Noise Level Tolerance.* New vehicles shall be designed to comply with the statutory limits of Vehicle Code Section 5 with no tolerance applied at time of manufacture. A 2 dB(A) tolerance may be applied when tested by an enforcement agency. Allowances are necessary due to unavoidable variations, i.e., measuring sites, test equipment, temperature, and wind gradients. Vehicles specified in Section 1 of the Vehicle Code shall not be considered in violation unless they exceed the statutory limit by more than 2 dB(A).

MRS. FALLIE DAVISON
Playa Del Rey, Calif.

Since we are financially unable to appear to give testimony today, we wish to confirm the need for environmental protection agency to preempt the FAA in the field of noise pollution control. The need is terribly urgent. Airport Cities Action Committee

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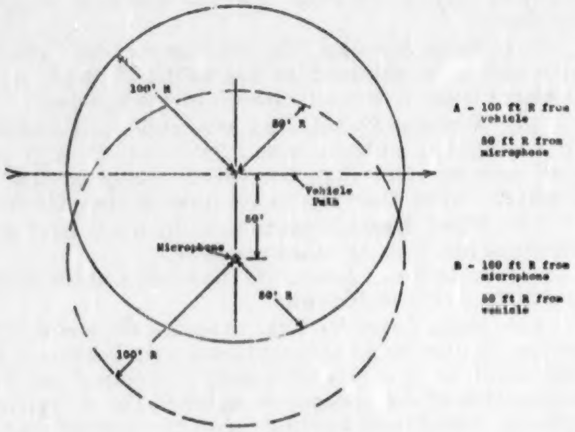

Figure 1

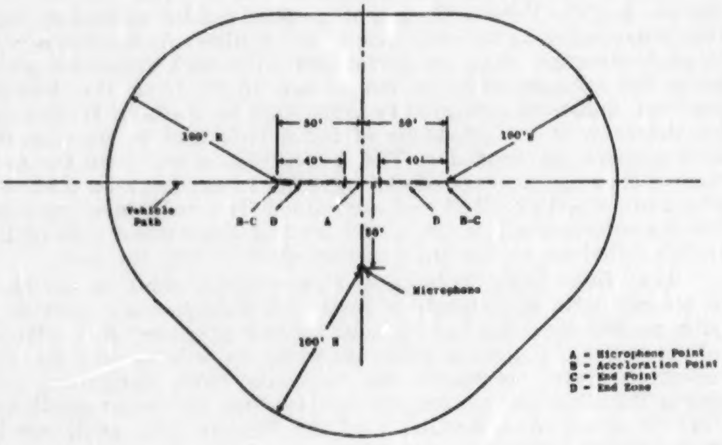

Figure 2

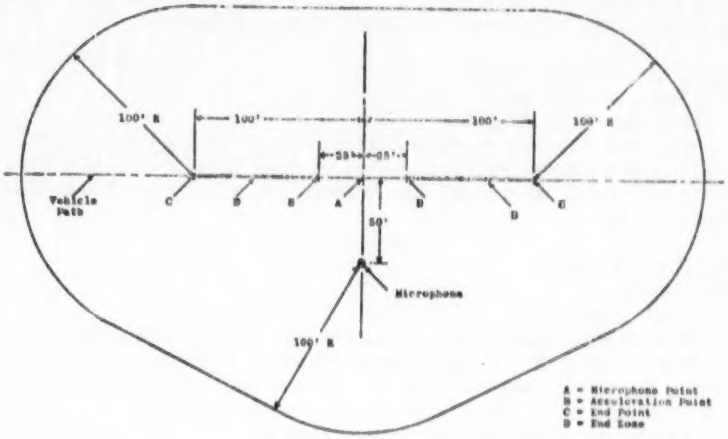

Figure 3

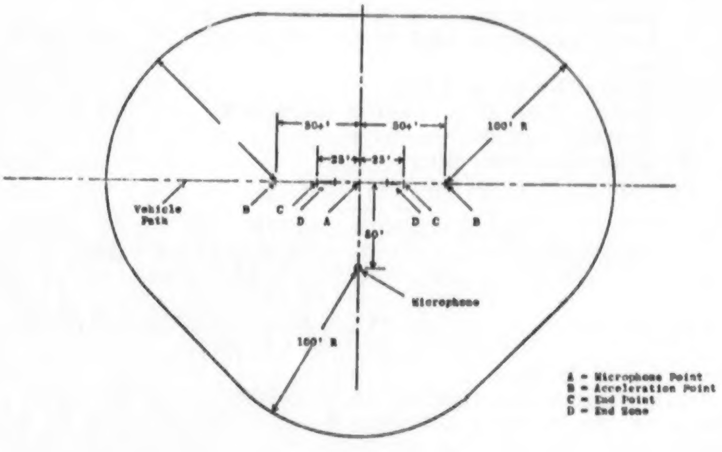

Figure 4

LORETTA FONTECHIO
7401 West 93 Pl.
Los Angeles, Calif. 90045

Total disregard by the FAA for community noise and all resulting damages to health and property make it imperative that EPA take over noise control. North Runway Residents

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JANICE CRUIKSHANK
7715 South Cowan Ave.
Los Angeles, Calif. 90045

FAA serves as the public relations arm of the airlines. Vitally need Environmental Protection Agency to step in and take control of aircraft noise. Watchful Eye Women's Council for Community Preservation

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MARIAN RUBIN
2364 Pacific
San Francisco, Calif.

Please discuss possibility of legislation setting minimum sound proofing standards for apartment bedrooms constructed in the future. Standards should prohibit normal sounds from any place in the building penetrating bedrooms in the building.

Examples of disturbing normal sounds

1. Opening and closing of closet doors
2. Sounds of voices in normal quiet conversation and laughter
3. Persons entering and leaving building running downstairs and engaging in conversation in hall
4. Lobby buzzer so loud it even penetrates 1st floor apartment
5. Echo effect from garage
6. Shower doors from another apartment
7. Sounds from kitchen above
8. Lobby door slamming
9. Stereo from another apartment

JOINT SIERRA CLUB— NORTHERN CALIFORNIA COMMITTEE FOR ENVIRONMENTAL INFORMATION

NCCEI STATEMENT

EPA NOISE POLLUTION HEARINGS, SAN FRANCISCO

SEPTEMBER 27, 28, 29, 1971

Gentlemen of the panel:

It is a pleasure to appear before you today to express our concern over the insidious proliferation of noise pollution in our environment. We feel that, obviously, many state and local governments are in need of guidelines and help to attack this threat with the immediacy which it demands. We, therefore, urge the federal government, through its agencies, to initiate the following program.

1. The internal combustion engine, especially as a mobile power source, is undoubtedly the primary cause of urban noise, and the poorly muffled exhaust is probably the noisiest byproduct of its use in vehicles.

There is, also, every probability that noise has physically and psychologically depressing effects well below the levels which we know will cause permanent or even temporary loss in hearing acuity. Mrs. Cuadra has often referred to levels of noise which are exasperating merely because they interfere with verbal information exchange, levels well below physically damaging.

2. We, therefore, urge the federal government to:

1. Compile a graded inventory of primary noise generators by class and numbers in use, as well as by manufacturer. This would give us a ready basis for reduction of those found to be at the top of the list.

2. Immediately establish standards of measurement and instrument performance which can be easily used in the field. We suggest, for example, the decibel "A" scale, at the property line or 25 feet from the directional centerline of vehicles.

3. Establish a maximum level for any noise and vibration generator affecting the general public health and well-being. We suggest that this top level should be set at no higher than 80 decibels, "A" scale, at the property line for stationary sources, or more than 25 feet from the directional centerline of any mobile source.

4. Set immediate limits as to time and place on supersonic flights, especially military and particularly training and "sunday warrior" flights.

5. Delineate, in cooperation with the national park service, and other wilderness zoning agencies, those areas over which none except emergency overflights should be allowed.

6. Set strict noise standards for civilian, shuttle-line, and helicopter flights operating within the 2000 foot urban and suburban envelope.

7. Develop performance noise level criteria for public and private vehicles as to the acceleration, steady-state, and deceleration modes.

8. Initiate research on noise generated by vehicle air turbulence, tire tread patterns, and various roadway surfacings.

9. In cooperation with the FAA establish visual identity marking criteria to aid in the apprehension of airborne noise violators.

10. Set stringent limits on off-the-road vehicles, especially construction equipment, snowmobiles, and motorbikes. As to construction noise, we feel construction is no longer temporary but an almost permanent factor in our lives.

That is the end of our list at this time. We will let others voice their concern over noisy eggbeaters, sanding machines and air conditioners. Our concern is primarily the out-of-doors environment. If we can halt and even push back the noise insanity that threatens to engulf us, we will have achieved a major gain in the quality of all our lives.

Melvin L. Hoffman
811 Nisqually Drive
Sunnyvale, California 94087
October 22, 1971

In Sunnyvale and Mountain View, activity at Moffett Field, in general, is certainly a source of noise pollution. Particularly annoying are the training flights which, as you may know, involve planes circling around (see map*) in a 5 or 6 minute orbit as the antisubmarine units practice landings. When three planes are in the air at a time, a low-flying plane may circle over one's residence every 1½-2 minutes, often at night.

Solution? Moffett Field will be a problem unless it is relocated at some time in the future. However, it would seem that the landing drills certainly should be performed elsewhere, away from populated areas. In the event that at some times this is not possible, then the circling should be done over the bay, or over industrial areas east of El Camino, not over residential sections of Sunnyvale and Mountain View.

*This map is on file at the Office of Noise Abatement and Control.

Dear Sir:

Enclosed, please fined some names to attach to my letter sent to you yesterday. This is just one day's effort to contact people who are bothered by the noise from 280 in Los Altos Hills.

We shall continue to get names and addresses for you if this will help our cause: "Relief from Freeway Noise."

Helen Ashby
Los Altos Hills

(Attached were 63 names and addresses.)

Irving Lambrecht
4201 Don Diablo Drive
Los Angeles, California 90008
293-0220

Sir:

Although it became impossible for me to testify in person at your recent hearings on noise pollution, I nevertheless wish to submit my written testimony. As my father and I have owned property next to Travis AF Base in Fairfield, California, for years, we have had a ringside seat in observing how well the Air Force regards the welfare of the surrounding community. Their two latest moves amply illustrate what I mean: their change in takeoff direction of their aircraft, and their attempt to establish a "greenbelt" around their runways.

On April 1, 1971, the takeoff direction of planes from Travis AF Base was changed from its original direction established when the base was constructed to a route much more westerly (see map*). As a result, it noisily passes much closer to the surrounding towns than it used to. No reason for the change was ever given the community. It certainly couldn't have been because of safety, because in the decades since the establishment of Travis there has never been an accident in taking off. It was so safe, in fact, that just this year the Air Force gave Golden West Air Lines, a commercial passenger carrier, permission to use and take off from its runways. Yet the takeoff pattern with its resultant noise was changed to veer west even closer to populated areas. What is worse, in actual practice the aircraft not only veer more right from their originally designed direction, they do so as soon as they gain altitude off of the runway, with the result that they swerve even closer to the community.

Nowhere could I find any evidence that the Air Force weighed the effect of its added noise pollution in changing its pattern of takeoff. However, in studying its proposed "greenbelt", it becomes clear why the Air Force wasn't the slightest bit concerned: the proposal is really a clever "with it" handle for a mandate to restrict the community from getting close enough to it to observe and thus complain about their noise and air pollution.

Their criteria for their proposed "greenbelt" is based on (but cunningly not limited to—that's a nice out) a. *Length and configuration of the runway system*—they are as originally designed for the topography and prevailing winds in the area, with no crosswind runways; b. *Aircraft flight patterns*—just changed after over two decades of safe operation; c. *Past aircraft accidents*—there have never been any takeoff accidents in the history of Travis AF Base (I checked this out); d. *Existing development in the runway zone*—it is low-density farm land, and the Master Plan of Solano County has specifically taken the surrounding area of Travis AF Base into account in their planning. In addition, the Air Force has easements over their landing and approach zones *based on their original flight direction*, yet it wants another easement, again not necessarily limited to, two and one-half miles from the end of the runway and one mile from either side; *Topography*—the same as when the base was designed and built; therefore, the aircraft assigned to be flown from there should reflect the topographical conditions already known to be existing; and f. *The Composite Noise Rating Zones.*

This CNR has been saved for the last, even though the Air Force ranks this high in their criteria (the noise update on their own map is dated 25 May 1971; also see enclosure*), for it is here and only here that the Air Force even remotely approaches a reason for desiring a restrictive easement they call a "greenbelt". Yet, if one studies their map, it is easy to see that these noises that the Air Force wants to keep the public away from really cover barely half of their proposed "greenbelt", while these very same noise levels cover *all* of Travis, including all of the living compounds. If the noise problem is serious enough in their eyes to attempt to establish a "greenbelt", then what about the high school and two grammar schools located well within that zone, what about the civilian personnel who work within that zone, and what about the military families who live and work there each and every day?

Saving our environment is too important to allow the Air Force to use the terminology of ecology as an aid in the concealment of their actions. A "greenbelt" does not stop noise pollution. A "greenbelt" does not stop air pollution. Only control at the source of the pollution, the aircraft themselves, can do that. It is far more wise to spend money on the modifying of aircraft than on the senseless and misleading "greenbelts". In the meantime, pending more pollution-free aircraft, the sensible thing to do is to fly aircraft in such a manner so as to disturb the environment and the community as little as possible. In Vietnam the military was quoted as claiming they had to destroy villages in order to "save" them. Does that have to happen to this country as well before we learn? Your aid in returning flights of Travis planes to their original takeoff direction as well as aborting their misleading "greenbelt" plan will be greatly appreciated.

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*This map is on file at the Office of Noise Abatement and Control.

*This information is on file at the Office of Noise Abatement and Control.

Sincerely,
Irving Lambrecht

Ralph W. Van Demark, Director of Special Programs
Motor and Equipment Manufacturers Association
222 Cedar Lane, Teaneck, N.J. 07666
Code 212—Phone 265-4544
October 22, 1971

Attached is a copy of the statement I delivered to the Environmental Protection Agency panel at the San Francisco hearing on Noise Abatement and Control on September 28, 1971. Copies of this statement were also distributed to the panel members and the EPA staff at the hearings.

I should like to make an additional comment to be incorporated in the hearing record as a supplement to my delivered testimony. In the question and answer session following my testimony, I was asked by panelist Dr. Carl Kryter if the static vehicle noise test procedure referred to in the second paragraph on page six of the original testimony was indeed a measurement of "total" vehicle noise. Dr. Kryter questioned the total concept for the static test which would obviously not measure tire and wind noise. As I recall, my reply to the question agreed with Dr. Kryter from the standpoint that the static test indeed does not *measure* the dynamic aspects of vehicle noise as wind, tire, certain drive-line components, etc. However, despite this apparent shortcoming, our Committee feels that this static test can be developed to allow the inspection of vehicle noise that would provide an adequate control of total vehicle noise, especially in urban and suburban areas where such noise is most unwanted. We feel that although our static test will not correlate exactly with a complete dynamic test, that the moderate speeds associated with vehicle operation in urban and suburban areas will hold attendant tire and wind noises to a minimum. Thus, we feel our static test procedure will be representative, at least of total vehicle noise under these conditions.

I believe that this additional information will more completely and meaningfully answer Dr. Kryter's question and request that it be included in the hearing transcript as part of the official record.

Very truly yours,
Ralph W. Van Demark
Director of Engineering Services
RWV/dj
Enc.

THE UNIVERSITY OF NEBRASKA
College of Engineering and Architecture
College of Agriculture
Lincoln, Nebraska 68503

Department of Agricultural Engineering
Telephone: 402-472-2824

October 18, 1971

Dr. Alvin Meyer, Director
Office of Noise Abatement and Control
Environmental Protection Agency
Washington, D.C. 20460

Dear Dr. Meyer:

I am enclosing herewith the additional information you requested regarding the tractor sound level demonstration booth I referred to in my testimony before your committee in San Francisco on September 30. I trust this information is sufficiently detailed to be of value to you.

At San Francisco I gave you about 24 pages of microphone location data which you indicated may be of value to you. Included with the data was a copy of a letter dated September 7, 1971 and addressed to a list of 19 gentlemen. I prefer that this two page letter not be included in the hearing transcript and I therefore request you have it removed therefrom. The summary of data accompanying the letter and the pictures of the tractor under test may remain.

During the committee discussion following my testimony, Mr. Hildebrand asked me several questions about whether tractor companies were reluctant to submit tractors for test. I am not sure that my responses to his questions conveyed the meaning I intended for them to convey. Therefore, I would appreciate it if you would send me a copy of that portion of my testimony which deals with Mr. Hildebrand's question so that I may edit or correct my answer to give the meaning I intended.

Thank you for your help. If I can be any further service to you with regard to tractor noise, measurements, etc., let me know.

Very truly yours,
G. W. Steinbruegge
Professor

A brief description and plan of a
SOUND LEVEL BOOTH
As used to relate the loudness of tractor noise
with
dB(A) sound pressure levels
at the
Nebraska Tractor Power and Safety Day
Mead, Nebraska, July, 1971
by
G. W. Steinbruegge
Professor
Department of Agricultural Engineering
University of Nebraska
Lincoln, Nebraska

A Sound Level Booth
by
G. W. Steinbruegge

There is currently much interest in the effect of everyday loud noise upon the hearing of those persons who are exposed to such loud noises. These noises occur in both urban and rural life chiefly as a result of the machinery with which people work. Farmers are exposed to loud noises as they operate the machinery used in agricultural production. The tractor is probably the principal noise source to which the farmer is exposed.

As a result of farmer interest in the loudness of tractor noise, the Tractor Testing Laboratory of the University of Nebraska has begun to test tractors for sound pressure level at the operator's ear as well as for the various machanical performance characteristics such as the Laboratory has determined for many years. The sound pressure levels are published in dB(A) in accordance with the general practice of today.

Anyone comparing the reports on the sound pressure levels of several tractors may have little feeling for the loudness of the noises reported because they are unacquainted with the units of noise loudness measurement. The Tractor Testing Laboratory and the Nebraska Agricultural Extension Service, therefore, have undertaken to acquaint the tractor buying public with a feeling for the loudness of various tractor noises and the corresponding dB(A) measurement of that noise.

A sound level booth was demonstrated at the 20th Annual Tractor Power and Safety Day held July 29, 1971 at Mead, Nebraska and attended by over ten thousand persons. This sound level booth was used to demonstrate the intensities of tractor noises of various levels. In this booth a recording of tractor noise was played continuously. There was a volume control in the booth which could be operated by the public and there was an indicator which showed where to set this volume control so as to have a noise in the booth of 80 or 90 or 100 dB(A) or anything in between. The public was invited to step into the booth and control the sound as they wished and thus they could hear how loud 100 decibels really was or how much a change of say 3 decibels would make in the noise of a tractor. In this way we introduced the concept of dB(A) to many otherwise uninitiated people and associated it with actual tractor noise level.

100 Decibels?
STEP INSIDE . . . HEAR FOR YOURSELF

The sound level booth drew continued interest throughout the day. Signs were used around the booth to inform the public about decibles, tractor noise, etc., as well as to provide a point of interest for the people as they waited to step into the booth.

The booth proved quite popular. This brief description and plan of the Sound Level Booth is provided so that others might also use this means to introduce the public to dB(A) sound levels.

Signs used with Sound Level Booth

The sign at the left had a cross-section drawing of a human ear and read:

"The human ear is a delicate instrument. Do not damage it by subjecting it to continuous high intensity noise."

To the left of the booth doorway the sign read:

"What is a decibel? A decibel is a measure of the loudness of a sound. The decibel loudness scale is a logarithmic scale which somewhat approximates the response of the human ear to changes of sound loudness. However, the ear responds more readily to the loudness of some sound frequencies that it does to others. The decibel, therefore, is usually weighted (or adjusted) to approximate even more closely the change of ear response with change of frequency. Such weighting is called "A-weighting" and "A-weighted decibels" are designated as "dB(A)". The dB(A) loudness of a sound is, therefore, a farily close indication of how loud that sound would be heard by the normal human ear. Tractors are tested for sound loudness at the operator's ear and such loudness is expressed in dB(A)."

Within the booth itself was a sign above the loudspeaker and loudness control knob which read:

"Operating Instructions: The noise you hear was recorded inside a tractor cab. By means of the control lever below, you may vary the playback loudness of the recording. By noting the actual change of loudness with change of dB(A) setting, you can judge how much effect a given dB(A) change will have on the noise to which the tractor operator is subjected."

To the right of the booth doorway the sign read:

"How much noise do tractors make? Official tractor tests indicate that some tractors currently being sold in Nebraska, subject the operator to full load noise levels as high as 100 dB(A); other tractors are as low as 90 dB(A) at full load. Lesser loads and lower engine speeds usually reduce noise levels, but not always. A 100 dB(A) sound will be heard by the normal human ear as twice as loud as a 90 dB(A) sound. Similarly, a 90 dB(A) sound is heard as approximately twice as loud as an 80 dB(A) sound. (Ear response approximately doubles or halves for each 10 dB(A) increase or decrease in sound loudness.) Therefore, if a tractor were to be built in which the noise at the operator's ear did not exceed 80 dB(A) that noise would be heard as only one-fourth as loud as present tractors which have noise levels of 100 dB(A)."

The sign on the far right read:

"The Walsh-Healey Act

The Walsh-Healey Public Contracts Act passed by Congress in 1969 pertains to the health and safety of workers in industries having U.S. Government contracts in excess of $10,000. Part of the Act relates to the noise exposure of workers in such industries and may not exceed the daily

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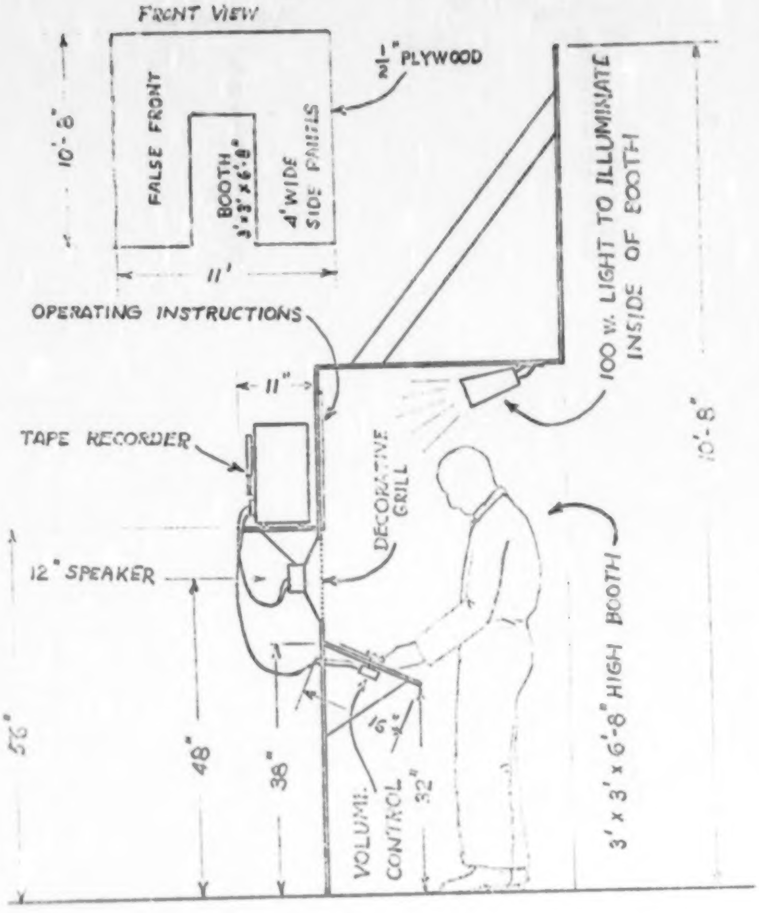

SOUND LEVEL BOOTH

TRACTOR POWER AND SAFETY DAY, JULY 29, 1971
UNIVERSITY OF NEBRASKA, DEPT. OF AG. ENGINEERING
G.W.S.

amounts of noise shown in the table below. These recommendations are being taken by many to be the desirable limits for tractors operators as well as industrial workers."

Permissible Noise Exposures

Sound level dB(A)	*Hours per day*
90	8
92	6
95	4
97	3
100	2
102	1½
105	1
110	½
115	¼

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